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THE AMERICAN ARCHITECT AND BUILDING NEWS

A WEEKLY JOURNAL OF CONSTRUCTIVE AND DECORATIVE ART.

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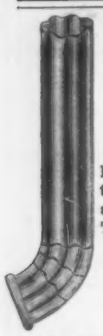

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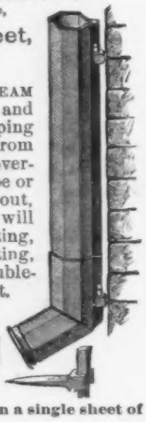

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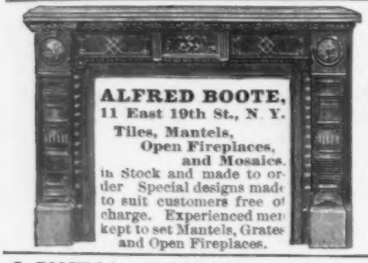

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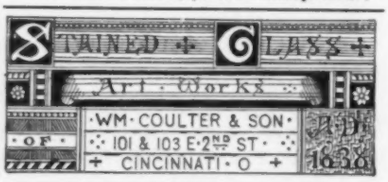

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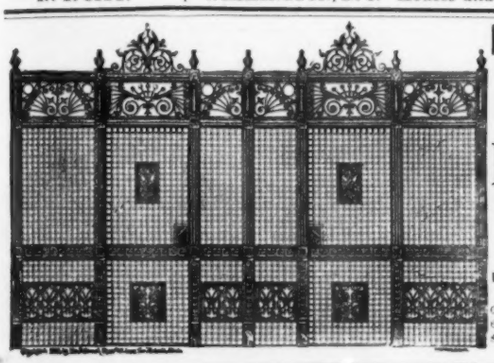

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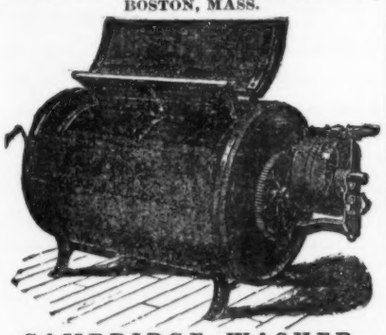

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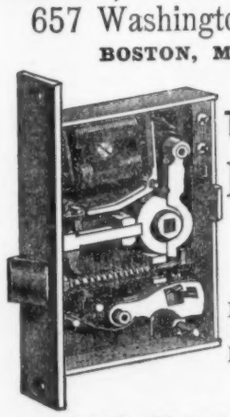

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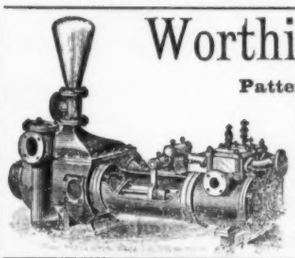

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BUILDING MATERIALS.

Reported for the American Architect and Building News.

BRICK.—₱ M.	New York. (Wholesale Prices.)	Boston. (Prices to Builders and Contractors.)	Chicago. (Prices to Builders and Contractors.)	Philadelphia (Prices to Builders and Contractors.)
Common: *Cargo afloat.*				
Pale	$3 00 @ $3 25	Eastern	Building Brick	Hud
Jersey	4 75 @ 5 50	7 00 @ 7 50	8 0 @ 9 00	@ 8 00
Long Island	@	Bay State Hard		Sa[illegible]on
Up River	5 50 @ 6 25	9 00		@ 6 00
Haverstraw Bay	6 00 @ 6 38	Domestic Com.	Indiana Pressd	Stretchers
" 1st	6 25 @ 6 75	8 00 @ 9 00	16 00 @ 28 00	@ 11 00
Hollow	@ 13 00	Domestic Face	St. Louis Fronts	Pressed
Fronts:		19 00 @ 30 00	@ 27 00	23 00 @ 23 00
Croton, Brown	12 00 @ 13 00	Philadelphia	— —	End Headers, all colors @ 65 00
" dark	12 00 @ 14 00	40 00 @ 45 00	— —	Edge & End all colors @ 85 00
" red	12 00 @ 14 00	Phila. mould	— —	
Chicago pressed		50 00 @ 80 00	22 00 @ 29 00	
Chicago Moulded			65 00 @ 350 00	
Baltimore	37 00 @ 41 00		@ 50 00	
Glens Falls — white	30 00 @ 35 00	Glens Falls	— —	
Philadelphia	24 0 @ 5 00	25 00 @ 26 00	@ 45 00	
Trenton	24 00 @ 25 00		38 00 @	
Milwaukee		Glens Falls Mould.	25 00 @	
Moulded:			60 00 @ 100 00	
Clark's Glens Falls — Red	25 00 @ 27 00	30 00 @ 35 00	30 @	
" — White	30 00 @ 35 00	35 00 @ 40 00	35 @	
White " Mold,	45 00 @ 60 00	45 00 @ 60 00	55 00 @ 65 00	
Enamelled: *Imp.*				
Enamelled (edge.)	85 00 @ 100 00	@	@ 100 00	Dom. @ 65
Enamelled (edge and end)	90 00 @ 115 00	@	@ 120 00	@ 85
CEMENT, LIME, etc.—(₱ *cask.*)				
Rosendale Cement	@ 1 00	@ 1 40	*Not Sold.*	1 50 @ 1 75
Utica, Akron, Buffalo, Louisville, Milwaukee	*Not sold.*	*Not sold.*	1 00 @ 1 25	*Not sold.*
Portland, English (Gibbs)	2 50 @ 3 10	@ 3 00	*Not Sold.*	@ 3 00
" " (K. B. & S.)	2 75 @ 3 10		3 25 @ 3 50	@ 3 00
" " (Burham)	2 50 @ 2 80		3 15 @ 3 35	@ 3 00
" " (White's)	2 65 @ 3 00		3 15 @ 3 35	
" German (Alsen)	2 50 @ 3 00	3 00 @ 3 50	3 15 @ 3 35	@ 20
" " (Fewer)	2 45 @ 2 70	3 15 @ 3 35	3 15 @ 3 35	
" " (Vorwohler)	2 50 @ 3 25		3 00 @ 3 25	
" " (Dyckerhoff)	2 75 @ 3 15	3 00 @ 3 50	3 25 @ 3 50	3 00 @ 3 2
" " (Lagerdofer)	@ 2 70	*Not sold.*	*Not sold.*	*Not sold.*
" " (Hanover)	2 50 @ 3 00		*Not Sold.*	2 50 @ 3 00
" French (Lafarge)	3 50 @ 4 50	*Not sold.*	3 75 @ 4 25	4 50 @
" American (Saylor's)	2 15 @ 2 30	2 15 @ 2 50	3 75 @ 3 00	@ 2 75
Selenitic		1 65	*Not sold.*	
Roman		@ 3 20	2 75 @ 3 25	3 50 @ 3 75
Keene's coarse	2 75 @ 3 00	@ 7 50	8 00 @ 9 00	6 50 @ 7 00
" superfine	5 00 @ 6 50	@ 11 50	12 00 @ 13 00	11 50 @ 12 00
	8 75 @ 11 00			
Lime:				
Lime of Teil	@ 5 00		*Not sold.*	
Hydraulic Lime	@ 1 45	@ 145		
Chicago Lime in bulk			60 @ 65	White Mash
Wisconsin "			75 @ 85	1 25 @ 150
Rockland and Rockport, (Com.)	@ 1 00	@ 1 15	*Not sold.*	1 00 @ 1 00
Rockland and Rockport, finish	@ 1 20	@ 1 20	*Not sold.*	
State, com. cargo rates (nom.)	@ 90	*Not sold.*	*Not sold.*	*Not sold.*
State, finishing "	@ 1 10	*Not sold.*	*Not sold.*	*Not sold.*
Plaster of Paris (calcined.)	@ 1 25	1 65 @ 1 90	@ 1 75	2 00 @ 2 25
" (casting)	@ 1 45	@ 2 25	@ 1 75	2 25 @ 2 50
Hair (Cattle) ₱ *bush*	21 @ 25	@ 30	20 @ 25	20 @ 25
" (Goat)	30 @ 35	@ 30	33 @ 40	28 @ 33
Sand, ₱ *load*	1 00 @ 1 25	@ 1 50	100 @ 1 25	@ 1 50
STONE. (₱ *cubic foot, rough.*)				
Granite: (*Maine*)		@ 60		75 @ 2 00
Limestone:				
Bedford	@ 1 00	95 @ 1 00	50 @	3 75 @
Joliet	@		35 @ 55	
Lemont	@		35 @ 60	
Serpentine			80 @ 90	75 @ 2

(Continued on page vi.)

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Foundation:	*(Wholesale Prices.)*	*(Prices to Builders and Contractors.)*		
Dimension	@	5 00 ℔ ton	20 @ 28	30 @ 5 00
Block	@	4 60 ℔ perch	8 50 ℔ coord.	50 @ 6 00
Rubble	@	1 25 @ 1 50	8 50 @	
Bluestone: (℔ *sq. ft.*)				
Sidewalk	30 @ 5 00	40 @ 1 75	75 @ 1 00	70 @ 90
Planed	50 @ 6 00	75	50 @ 1 00	1 10 @ 1 25
Sandstone,				
Longmeadow	@ 80	75 @ 85		@ 83
Kibbe	@ 90	85 @ 95		@ 93
Brown (Connecticut)	1 00 @	1 25 @ 1 45	1 50 ℔ cub. ft.	1 35 @ 2 00
Amherst } Ohio	90 @ 95	90 @ 1 00	55 @ 65	
Berea } Ohio	75 @ 1 00	80 @ 90	45 @ 55	90 @ 1 10
Berlin } Ohio	75 @ 1 00	80 @ 90	55 @ 65	
Belleville	80 @ 1 25	1 25 @ 1 35	"	
New Brunswick and Nova Scotia	@ 1 00	75 @ 1 00	"	
Caen	@	@ 2 00	"	
Marble (℔ *cu. ft.*)				
Lee, Mass	@	1 75 @ 2 50	*Not sold.*	2 00 @ 2 50
Rutland, white	@	@ 3 00	3 50 @ 6 00	2 25 @ 2 50
Sutherland Falls	1 25 @ 1 75	@ 2 00	3 50 @ 6 00	2 50 @ 4 00
Glens Falls, black	@	2 00 @ 3 00	*Not sold.*	4 00 @ 4 50
Italian, blue-veined	@	50 @ 60	@ 4 40	—— @ ——
" Sienna	@	3 00 @ 3 50	*Not sold.*	3 25 @ 6 50
Tennessee, red	@	1 25 @ 2 50	@ 4 00	2 00 @ 3 00
" Knoxville	@	85 @ 90	@ 4 00	@ 1 50
Pennsylvania, blue	@		*Not sold*	2 23 @ 2 50
Vermont, white	@	1 50 @ 2 00	3 50 @ 6 00	
Slate: Roofing (℔ *square*)				
" green	7 00 @ 8 00	4 50 @ 7 00	6 25 @ 8 10	6 25 @ 7 00
" " unfading	@ 5 75	@ 5 75		
" purple	7 00 @ 8 50	5 50 @ 6 50	@ 8 60	@ 7 00
" red	@ 15 00	13 00 @ 14 00	— @ 16 00	@ 12 00
" black, Lehigh	—— @ ——	Brownville, Me.	7 20 @ 7 60	@ 4 00
" " Chapmans	—— @ ——	6 50 @ 9 00	7 30 @ 8 00	@ 4 50
" Unfading Black, Monson, Me.	5 50 @ 8 00	5 50 @ 8 00	6 00 @ 8 50	5 50 @ 8 00
Tiles, Am. ℔ M.	@		*Not sold.*	@ 15 00
N. Peach Bottom, warranted unfading				@ 3 85
LUMBER. — ℔ M.				
Boards: (*Ordinary dimensions.*)				
Pine, 1st quality, clear	65 00 @ 75 00	50 00 @ 60 00	46 00 @ 48 00	65 00 @ 75 00
" 2d quality	55 00 @ 60 00	42 00 @ 48 00	44 00 @ 46 00	55 00 @ 60 50
" 3d quality	18 00 @ 22 00	35 00 @ 40 00	43 00 @ 45 00	18 00 @ 22 00
Spruce	@ 25 00	12 00 @ 14 50	*Not sold.*	@ 22 50
Hemlock	ea. 17 @ 18	11 00 @ 12 50	@ 10 00	12 50 @ 15 00
Yellow pine	20 @ 40	25 00 @ 40 00	@ 28 00	17 00 @ 20 00
Cypres	@	32 00 @ 40 00	@	40 00 @ 55 00
Clapboards:				
Pine	@	33 00 @ 55 00	10 50 @ 22 00	——@——
Spruce	@	23 00 @ 35 00	*Not sold.*	——@——
Framing Timber:				
Pine			12 00 @ 17 00	25 00 @ 35 00
Spruce	13 50 @ 16 00	13 50 @ 15 00	*Not sold.*	18 50 @ 20 00
Hemlock	12 00 @ 15 00	@	10 5 15 50	12 00 @ 14 00
Yellow pine	18 00 @ 25 00	25 00 @ 30 00		25 00 @ 30 00
Laths:				
Pine	@	2 25 @ 2 35	1 75 @	—— @ ——
Spruce	2 30 @ 2 40	2 25 @ 2 50	*Not sold.*	2 35 @ 2 40
Shingles:				
Pine, shaved ℔ M.	5 00 @ 6 00	@	*Not sold.*	
Pine, sawed "	4 00 @ 5 00	@ 4 50	2 40 @ 2 60	
Spruce, sawed "	1 50 @ 2 00	@ 1 50	*Not sold.*	
Redwood ℔ 125	1 40 @ 1 60	3 75 @ 4 50	5 50 @ 8 00	30″ $10 @ 28
Cedar, split ℔ M	@	@	*Not sold.*	24″ 8 @ 21
Cedar, sawed "	@	2 00 @ 4 00	2 25 @ 2 35	20″ 5 50 @ 14
Cypress. Split....7 x 24. "	18 00 @ 20 00	5 50 @ 6 00	4 00 @ 4 50	13 00 @ 20 00
Miscellaneous:				
Piles ℔ ft.	4½ @ 5½	Piles 6c. ℔ ft.	*Not sold.*	
Fence pickets, Spruce	8 00 @ 10 00	10 00 @ 18 00	Pine, 8 @ 21 00	12 00 @ 14 00
Cedar posts, 9 ft. (sq. posts.)	@	25 @ 35	9 00 @ 21	7 @ 1 25
Chestnut "	@	25 @ 35	*Not so*	28 @ 36
Finishing Woods: ℔ M. (*First Qual. Kiln-dried.*)				
Ash	@ 55 00	38 00 @ 48 00	35 00 @	45 00 @ 50 00
Cherry	80 00 @ 120 00	60 00 @ 90 00	80 00 @ 100 00	65 00 @ 90 00
Chestnut	@ 55 00	38 00 @ 50 00	45 00 @ 50 00	60 00 @ 80 00
Butternut	40 00 @ 60 00	60 00 @ 70 00	50 00 @ 60 00	70 00 @ 85 00
Mahogany, Baywood [Mexican]	@ 180 00	150 00 @ 160 00	150 00 @ 180 00	120 00 @ 150
" St. Domingo	@ 250 00	120 00 @ 350 00	250 00 @ 300 00	
Maple	45 00 @ 50 00	45 00 @ 60 00	30 00 @ 35 00	30 00 @ 50 00
Oak, red	@ 70 00	@ 50 00	35 00 @ 40 00	35 00 @ 45 00
" white	@ 70 00	50 00 @ 55 00	35 00 @ 40 00	55 00 @ 65 00
" quartered	@ 90 00	65 00 @ 70 00	45 00 @ 50 00	70 00 @ 80 00
Sycamore quartered		50 00 @ 65 00	40 00 @ 50 00	70
Pine, clear	65 00 @ 70 00	3 00 @ 65 00	45 00 @ 50 00	65 00 @ 90 00
Redwood	60 00 @ 70 00	60 00 @ 70 00	56 00 @ 65 00	100 00 @
Rosewood ℔ lb	@ 6		@ 7	
Walnut, black	125 00 @ 150 00	85 00 @ 120 00	80 00 @ 100 00	160 00 @ 200 00
Whitewood	45 00 @ 50 00	38 00 @ 45 00	30 00 @ 35 00	20 00 @ 30 00
Yellow pine ℔ M	@ 45 00	40 00 @ 45 00	30 00 @ 35 00	30 00 @ 35 00
Gumwood, best red			30 00 @ 35 00	
PAINTS. (*In oil,* ℔ *lb.*)				
White lead, Am.	6½ @ 6½	6½ @ 7	@ 6½	5 @ 6½
" Zinc, "	5 @ 8½	@ 8	7 @ 10	4 @ 6
Red lead, Am.,	6 @ 6½	6 @ 6½	@ 6½	8 @ 12
" Venetian	6 @ 10½	7 @ 12	1¾ @ 2½	4 @ 6
" Vermilion	65 @ 70	55 @ 60 dry	55 @ 60	Am. 14 @ 22
Red Indian, Eng.	12 @ 20	12 @ 20	12 @ 20	12 @ 16
Yellow Ochre	6 @ 15	7 @ 12	3 @ 15	7 @ 9
" Chrome	12 @ 20	18 @ 25	15 @ 25	12 @ 22
Green (chrome)	8 @ 13	8 @ 20	10 @ 20	9 @ 15
Green, Paris,	25 @ 40	25 @ 40	18 @ 35	14 @ 28
Black, lamp,	15 @ 25	15 @ 25	8 @ 30	10 @ 18
Blue, ultramarine	12 @ 18	18 @ 30	12 @ 35	15 @ 30
Oil, linseed, (raw) (℔ *gals*)	43 @ 44	44 @ 49	41 @ 42	45 @ 46
" " boiled	46 @ 47	47 @ 52	44 @ 45	48 @ 49
Turpentine	37 @ 38	41 @ 48	40 @ 40½	37 @ 39
Varnish, coach		1 50 @ 6 00	1 25 @ 2 00	1 75 @ 5 25
Shellac		2 50 @ 3 00	3 25 @ 4 00	1 60 @ 3 00
Putty	2 @ 3	2 @ 4	02 @ 02½	1½ @ 2½
Whiting (*dry*)	50 @ 65	1 @ 1½	1 @ 2	@
Paris white, (Eng.,) (*dry*)	2 @ 3	2 @ 3	2 @ 2½	1½ @ 1½
Litharge, Am.	5½ @ 5½	6½ @ 7	@ 6½	1½ @ 1½
Sienna (burnt)	12 @ 17½	14 @ 20	4 @ 16	6½ @ 6½
Umber, "	11 @ 16½	14 @ 20	@ 10	@ 14

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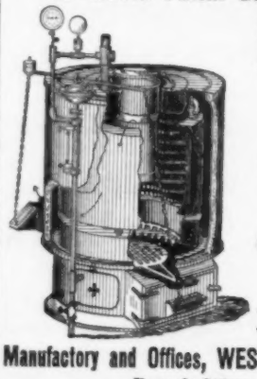
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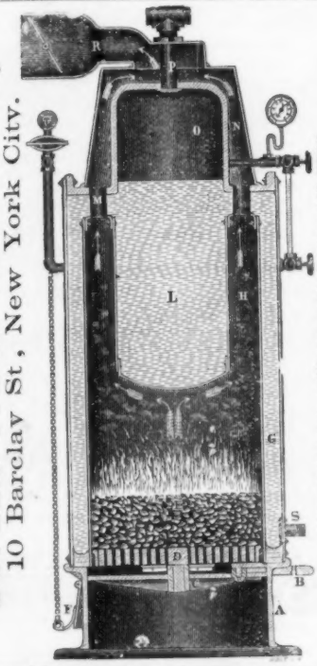

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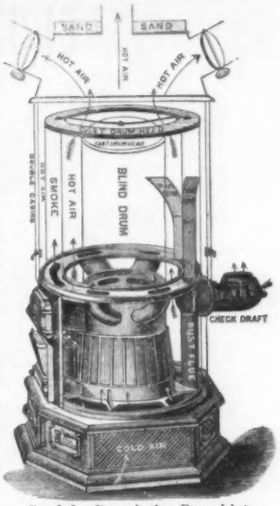

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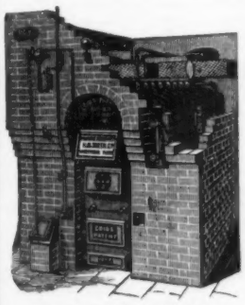

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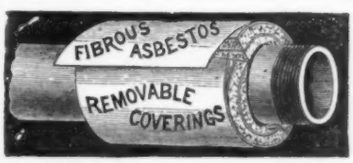

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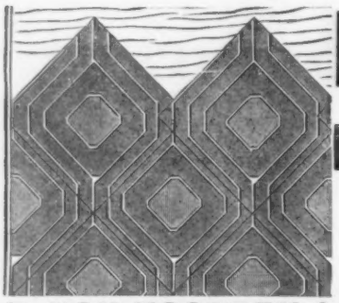

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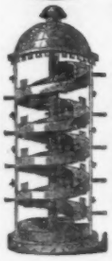

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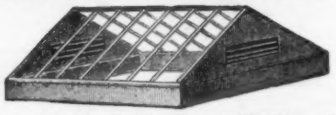

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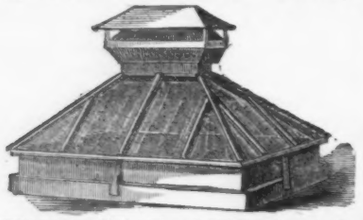

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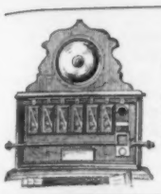

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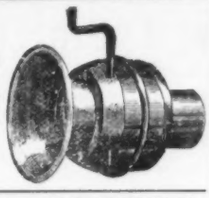

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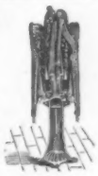

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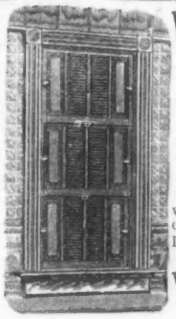

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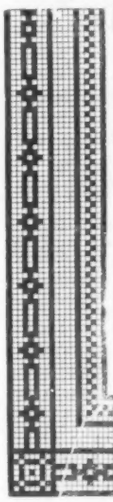

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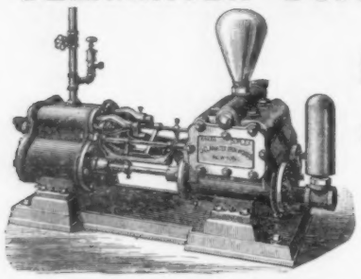

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A CURIOUS, as well as rather instructive incident, occurred not long ago in a competition in England, which is not without its moral, when compared with the circumstances of a recent important competition in this country. The town of Bournemouth is a flourishing place, inhabited by a rapidly-increasing population of rich people, who come there to enjoy the climate. To add to their pleasures it was proposed, some time ago, to construct an "Undercliff" drive along the seashore; and Commissioners were appointed to study the subject. The Commissioners, as such officials usually do, requested the town surveyor, who was of course familiar with the ground, and whose services could probably be had for nothing, to assist them in their deliberations, and to offer suggestions; and this naturally led to his preparing a plan embodying the fruits of his and their combined wisdom. When the Commissioners had gone far enough to be tolerably sure of what they wanted, they announced a competition, and appointed a professional engineer, Sir Joseph Bazalgette, as the sole judge in assigning the premiums. When the day arrived for inspecting the designs, one can imagine the surprise and pleasure of the Commissioners at finding one which confirmed their own conclusions in a striking manner, exhibiting nearly all the features which they had themselves thought to be desirable, and arranged in a similar way. Faithful, however, to their promises, which seem to have been kept in the most honorable manner, they left their expert to judge for himself about it, and were probably gratified at his selection of this particular design, which the *Builder's* critic calls "eminently practical and well thought out," for the first premium, awarding the second and third to two other "well thought out" plans. On opening the sealed envelopes containing the names of the authors of the designs, the winner of the first prize was found to be a Mr. Stewart, a civil and mechanical engineer temporarily stationed at Bournemouth; and it was not until some time afterwards that the discovery was made that the prize design was simply a reproduction and amplification of the plan made for the Commissioners long before by the town surveyor, who had brought his original drawing to Mr. Stewart, to be worked up into shape for competition. As it happened, Mr. Stewart was himself engaged on a design of his own, but he was kind enough to supervise the work of developing the surveyor's plan into competition drawings, which were made by the surveyor's son under his direction. When the drawings were finished they were sent in, together with his own design, under his name. The disclosure of this curious arrangement gave no small trouble to the Commissioners, who doubted whether the surveyor had not been guilty of a breach of faith in allowing his plan, made for them, to be used in such a way. The question was submitted to a very distinguished lawyer, who rendered an opinion that the surveyor had not failed in his duty toward them; but they were honorable enough to be unwilling to suffer any suspicion of unfairness to be cast upon their management of the competition, and reconsidered the award, throwing out altogether the design of the surveyor, advancing the winners of the second and third prizes to the first and second places respectively, and making a new selection for the third prize. It is quite likely that none of the designs will be executed after all, but the illustration of the fact that very scrupulous managers of competitions are likely to disappoint the expectations of persons who imagine that they have the "inside track," or some other private advantage, is worth reflecting upon.

THE Pullman sewage-farm has, it is said, proved successful and profitable this year, the net income having been five thousand dollars, after paying all expenses. This is a liberal interest on the cost of the sewage system, and the engineer of this, and the manager of the farm, may again congratulate themselves upon having maintained the success of the most important economical experiment of modern times. The population of Pullman is now about ten thousand. The fertilizing value of the wastes from dwellings is usually estimated at two dollars per annum for each person; so that Mr. Williams and his not less able coadjutor on the farm have succeeded in collecting the fertilizing matter, transporting it to a long distance, and applying it to the land, at a total cost which has consumed but three-fourths of its value. To show the significance of this result, we need only apply the same proportion to New York. It would be strange if the sewage from a large city could not be handled with greater economy than that from towns like Pullman; but, supposing the cost per capita to be the same in both cases, the application of such sanitary and agricultural skill as that shown at Pullman to the city of New York ought to result in turning six hundred thousand dollars a year into the municipal treasury. It will be long before such results can be attained in the great cities, but the smaller ones, of six, eight, ten, twelve, or even twenty thousand inhabitants, have now, in Pullman, an example of what may be done, under circumstances of climate, soil and topography as unfavorable as are to be found anywhere in the country, to solve with complete success the problem of sewage disposal. In its four years' experience all the important difficulties of detail have been met and overcome, and the knowledge thus gained is at the service of all who wish to avail themselves of it; and it cannot be long before those who hesitate to acknowledge the merit of the system will be looked upon with something of the ridicule which now attaches to the persons who imagine that the sap of plants nourished by sewage is contaminated by it, or who, like a certain wiseacre in England, profess to have discovered that the crows which pick up seeds and worms on irrigated farms become intoxicated, by reason of the beer contained in the sewage.

THE *Scientific American* for November 28 contains a long account of the dispute as to whether Philip Reis or Professor Bell was the original inventor of the telephone, and gives full-size drawings of the original instruments which Reis described and used in his lecture before the Physical Society of Frankfort in 1861. These instruments have been for something more than a year in this country, and, without alteration or repair, beyond the renewal of a wooden support for one end of a small rod, have done just what Reis said they would do, reproducing human speech, "not with a distinctness sufficient for every one," but transmitting "consonants pretty distinctly, and vowels somewhat less so," but plainly enough to allow practised operators to communicate perfectly a sentence containing fifty-six words. Reis's lecture, under the name of "Telephony by Means of the Galvanic Current," was published in the Report of the Frankfort Physical Society for 1860–61, with a drawing of the transmitter, and full descriptions, both of this and the receiving instrument, and directions for their use. After the publication of this paper, which excited much attention among scientific men all over the world, Reis made, invented and described improved forms, which proved much more efficient than the original instrument, and, as reproduced from his published descriptions, transmit speech with complete success. The Reis transmitter, according to the account, is nearly the same as that now in use, but has platinum electrodes instead of the carbon now generally used. The original receiver is not very clearly described, but consisted of a helix with a knitting-needle through the centre, connected in some way with a sounding board, on which it rests. What improvements Reis made on this, we are not informed.

TEN or twelve years after this, the account goes on to say, Professor Bell, who is said to have been familiar with Reis's writings on the subject, made a successful application for a patent for an instrument which he called "an apparatus for transmitting vocal and other sounds telegraphically." The instrument consisted of two cones, each provided with a membrane, to which was attached the armature of an electro-magnet. The electro-magnets were shown in the drawing which accompanied the application, as connected by a wire. No model was submitted, and, by his own testimony, Bell had never, when his patent was granted, got a word of articulate speech through any instrument whatever, and it is doubtful whether he could have done so if the instrument described in his application had been actually constructed, its design being extremely defective. On the day that Bell's application was made, a caveat, which is a preliminary application, made to secure a principle which the inventor has not yet carried out into perfect detail, was filed at the Patent Office in the name of Professor Elisha Gray, describing a plan for a telephone with a liquid transmitter. Although a caveat is required, by the rules of the Patent Office, to be kept in the secret archives of the office, Gray's plan is said to have been communicated to Bell, who subsequently constructed a telephone with a liquid transmitter, which, by his own testimony, was the first through which he ever obtained articulate speech. Although Reis's telephone had, fifteen years before, "reproduced consonants pretty distinctly, but vowels, as yet, not in an equal degree," the assignees of the Bell patent appropriated the name which Reis gave to his instrument, and laid claim to "the right to the transmission of speech by all known forms of electric speaking telephones," and have hitherto, in this country, successfully defended that claim. According to the *Scientific American*, "in no other country in the world has such a claim been even attempted to be maintained," and foreign electricians, as it says, wonder at the audacity and skill with which it has been so long maintained in the United States. We have great confidence in the fairness and skill of the *Scientific American* in such matters, and although we do not pretend to express any opinion on the controversy, we think we speak for a good many telephone subscribers in saying that if the facts bear out the *Scientific American's* view, a sufficient amount has already been extracted from their pockets to reward amply the "audacity and skill" which have directed the operation, and if the Bell monopoly rests on nothing better than the fact that Professor Bell once erroneously thought that he had devised a slight improvement on what Reis had made public half a generation before, it is quite time that it should be brought to a termination.

THE same journal publishes the arguments on Professor Bell's side of the telephone patent question, in the shape of a letter from Mr. E. Berliner, now of Washington, who is well known as the inventor of a special form of telephone, as well as of certain improvements in the Bell telephone. Mr. Berliner makes his letter mainly a statement of facts, asserting, first, that the Reis telephone, when used as described by him, will not transmit speech; but that if manipulated on Bell's principles, as was sometimes accidentally the case when used by Reis, it can be made to do so. Moreover, Mr. Berliner continues, the principle on which Reis based his instruments was clearly enunciated and described, under the name of "telephony," five years before Reis's experiments, in a scientific paper published in the city where Reis then lived. This paper attributed the discovery of the principle which it described to Charles Bourseul, to whom, as it appears, much of the credit of the invention of the telephone should be attributed. In regard to the assertion, which was made, we believe, without contradiction, in the hearing before the Secretary of the Interior, that Gray's caveat for a telephone employing a liquid transmitter was shown to Bell when his application was filed, and before Bell had made the liquid-transmitter telephone, through which he first succeeded in communicating speech, Mr. Berliner says that Bell's original application, which was sworn to several weeks before Gray's caveat was written, contained a description of the method of using a liquid transmitter, proving that Bell did not obtain the idea from Gray's caveat. Whatever we may think of the theory that the man who explains why an instrument works is entitled to the exclusive use of that instrument in place of the man who invented it, we only wish to give as impartial a view of the facts as possible; and it is no small satisfaction to believe, as, from Mr. Berliner's letter, we think we may, that the story of Bell's attempt to appropriate Gray's transmitter has no foundation.

THE *Builder* gives a plan and elevation of an apparatus which has been used here for two or three years, but has only just been introduced into England, for drying lumber rapidly and completely. The process ought to be called one of seasoning rather than drying, for, although it is completed in a few days, the effect is substantially the same as that of a year's water-seasoning, followed by a thorough drying in the kiln. Every one knows that the essence of a seasoning process, as applied to timber, is either the removal or the chemical change of the sap contained in the pores of the wood. This sap is an albuminous fluid, of complex composition, and very subject to fermentation and putrefaction. If it is allowed to remain in the wood, the sap is liable, if the timber is not thoroughly dried, to decompose, and its putrefaction extends to the substance of the wood, causing it to rot. If the wood is dried with the sap in it, the tendency to fermentation is arrested, but the gum formed by the dried sap has, like many other organic substances, the property of absorbing moisture from damp air, and the wood containing it is thus subject to irregular swelling and contortion. The ancient method of extracting the sap was to float the timber for a year or two in water, which dissolved out the albumen and sugar, leaving nothing but the inert cellulose of the woody fibre, but this is too slow a process for the moderns, who content themselves with exposing the timber for a short time to the air, and then drying it, with much of the sap still in it; or, if it is absolutely necessary to check the tendency to decay, the sap is coagulated by injecting chemicals, as in the Burnettizing and Kyanizing processes, or is sucked out with an air-pump, to be replaced with oil of creosote, as in the creosoting process. None of these methods of treatment except the last, approach in economy and effectiveness the old process of floating, but the new apparatus, which is known in England by the unpretending name of the "Common-Sense Timber-Dryer," seems to offer a means for securing the advantages of the ancient method, in the short time which our present habits allow us to devote to such processes.

IN the "Common-Sense Timber-Dryer" the sap is removed by the action of hot watery vapor. The pieces are piled in a closed chamber, heated by steam pipes, and a jet of steam is thrown into the chamber. The temperature of the room is kept at about one hundred and twenty-five degrees Fahrenheit, so that the albumen in the sap is not coagulated, but dissolves in the condensed vapor, and flows away. The wood is kept in this vapor bath for several days, until the soluble parts of the sap are considered to have been removed. The process is then reversed. The steam jet is shut off, although the room is still kept hot by the coils of pipe, and a fan-blower is set in motion to draw the saturated air from the room. It is forced through the outlet-pipe of the fan to a condenser, which is simply a cylinder, cooled by circulation of water, or in some other way, and is then chilled. The reduction of the temperature causes the condensation and deposition of most of the moisture contained in the air, and it is then forced, comparatively dry, again into the closed chamber, where it issues from a perforated pipe laid on the floor near the steam coils, and, becoming warmed by contact with them, rises among the wet timbers, to take up a fresh dose of moisture from them, which is again condensed, and the air dried and returned in the same way. As the circulation continues, the moisture in the wood gradually evaporates, until, at the end of eight or ten days, the whole charge of timber is dry, ready for conversion into joiner's work. Independent of its superior efficacy in dissolving and removing sap, the new process has the advantage over the common system of air-seasoning of being perfectly under control; so that there is no loss from blackening and splitting, such as takes place with boards exposed to rain and sun out of doors; and the product has a uniform character which can seldom be secured in ordinary lumber. These considerations are so important that some piano manufacturers in this country, who need the most thoroughly seasoned and perfect materials that can possibly be procured, are said to prefer green wood, freed from its sap and dried in this way, without any floating or exposure to the weather, to the best timber seasoned by the ordinary methods.

NOTES OF TRAVEL.

MUNICH.

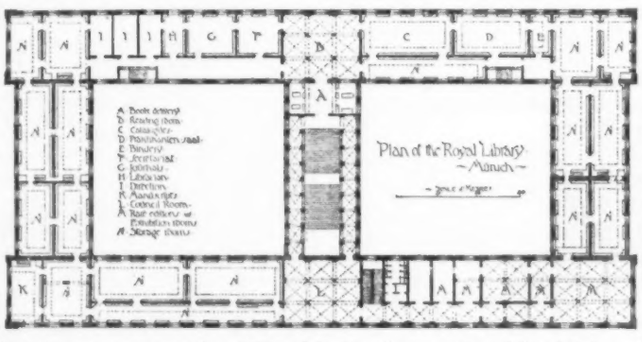
Dormer Window
Children's Hospital, Finsbury
Lond: Engl'd Leading Architect

THE Royal Library at Munich is one of the many monuments which the city owes to King Ludwig I, the ruler who did so much to raise his capital in every department of art. As a collection, the library is of quite ancient origin, but in its existing form and arrangement it dates only from 1842, when the present building was completed and opened. It is now one of the largest of the European libraries, comprising over 900,000 volumes and 25,000 manuscripts. The arrangement of the building leaves a great deal to be desired in nearly every respect, though there are some valuable ideas to be derived from it; and, aside from its including so important a collection, there are points in the arrangement of the rooms which, under different conditions, might seem to show a more definite purpose in the minds of the planners than one would at first suspect, and which give the building an interest to any one who would make a comparison of European libraries. Ludwig I intended that everything about Munich should be magnificent, at least if size could make it so. The streets are wide, the Ludwig Strasse, in fact, is rather too wide for any good effect; the Pinakotheks, both old and new, would be much better if reduced in size; the railway station is one of the largest on the Continent; and the library in turn follows the lead by providing storage accommodations for at least four times the number of volumes which is ever likely to be placed there. The building is too magnificent, too diffuse in all its parts; but assuming that the architect intended to plan for a library the size of the Bibliothèque Nationale at Paris, it is easy to see that his scheme was a natural one to follow, and one which even now could be better adapted to existing conditions than we find it to be.

The plan shown herewith is taken at the level of the main story, the second floor, as we would term it. Externally the library presents a plain, unbroken front of about 500 feet, in three strongly marked stories, with round-arched windows of broad proportions, and a long, wearisome, corbelled cornice, the whole assumed to be in the style of the early Florentine Renaissance. The entrance from the street is in the centre of the façade under the room marked L in plan. The lower story is occupied almost entirely by the Bavarian National Archives. The library proper is reached thence by an imposing staircase in the central wing of the building. At A is the vestibule, where books are applied for and returned. Beyond it is the reading-room, seating not over sixty persons, with the catalogue-room on the right, and the room for journals close by on the left. The reason for having such limited accommodations for readers is that most of the books used are lent out of the building, a feature common to the management of nearly all the German libraries, as distinguished from the custom in Paris, where nothing is allowed to be carried away. The reading-room in the Munich Library is found to be quite ample for the accommodation of the transient readers.

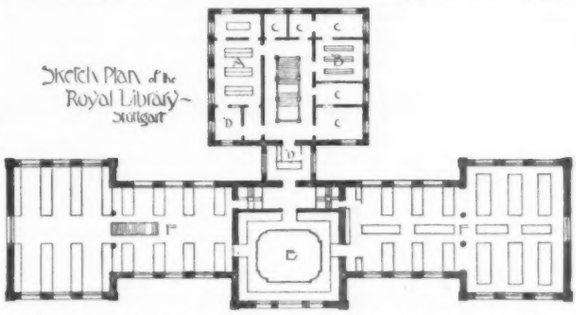
The room over the entrance is designated as a hall for meetings, but actually it is a great, bare apartment, having the air of being but little used. The corner room at the right of the front is fitted up as an exhibition room for rare editions, etc.; a corresponding room on the left contains the most curious of the manuscripts, many of them in glass cases; the offices of the Direction are at the rear at F and I; and all other rooms of this floor as well as the corresponding rooms of the story above are used for the storage of books, the shelving being built against the walls in three tiers, with two light galleries throughout. The shelving, galleries and flooring are everywhere of wood.

The defect of this arrangement is chiefly that the storage rooms are so scattered that the books are not readily accessible from the reading-room, while the available space is not more than a quarter utilized. Were the number of volumes quadrupled this objection would not be so apparent, as the additional shelving would leave little waste space; but it would seem as though with the present number a better plan would be to classify both books and readers, as is done in the University Library at Vienna, arranging say Theology and the Sciences in the two rear wings of the building, while History and Languages occupy the front, the two rooms L and B serving as reading-rooms for the respective classes of readers. This would allow the books to be quickly reached, and the division of the readers in two rooms would hardly be an objection. Indeed in quite a number of the German libraries just such division is really made. But as at present utilized the plan of the Munich Library is hardly a success, and the management does not tend to increase the value of the collection to the student. The catalogue is still in a formative state, and though open to everybody's inspection is not always intelligible, even to the attendants themselves. The reviews, etc., in the journal room are reserved for members of the Academy and professors at the University; and the service of the library is so slow as to quite discourage any one who is at all inclined to be in a hurry.



The library possesses a number of curiosities in the book line. There are manuscript sermons of St. Augustine; a Latin Book of the Gospels written on purple vellum with gold and silver letters; the oldest manuscript of Parcival and the Nibelungenlied; Albert Dürer's Prayer-Book, with sketches by himself and Louis Cranach; several richly-decorated old manuscripts, lavishly bound with solid gold set with precious gems; and what is of more historical interest, the first page printed from movable types, the first wood-cut, the first electrotype, and the first lithograph.

In the way of convenience and comfort in arrangement, the people

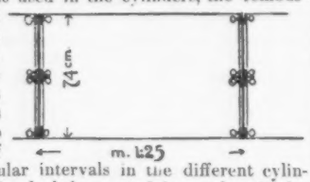


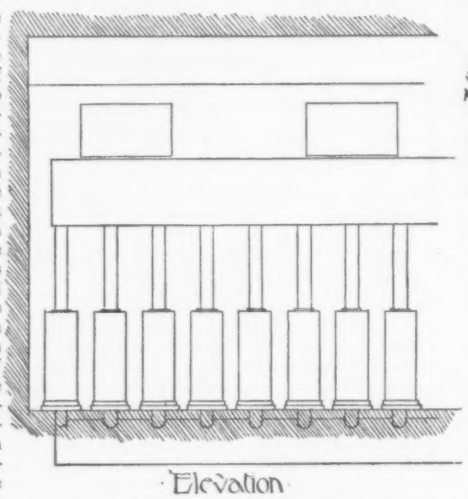
of Munich might learn a great deal from their neighbors in Wurtemberg. The Royal Library at Stuttgart is one of the pleasantest places in which to read in all Germany. The collection numbers barely three hundred and sixty thousand volumes, but the catalogue is so full and so admirably arranged, both by topics and by names of authors, that all of the books are at the reader's command; while the reading-room is carpeted and upholstered in a style to suit the most fastidious, and is amply provided with comfortable chairs, book-rests, pens, ink and blotters. The regulations regarding the use of books are most generous, allowing them to be consulted freely at the library or taken out for a number of days, and the porter is conveniently allowed to deliver books at the homes of the readers without personal application by them. The building is of quite recent date; indeed some portions of it are but just completed. The plan given above was sketched from memory and indicates only the general disposition. The reading and catalogue rooms, as well as the offices, are in the rear wing, which, on account of the slope of the ground, is a story higher than the rooms shown in plan at the front. A is the reading-room; B contains the catalogues; the offices are at C, and the delivery of books at D. Large portfolios of prints, heavy folio editions, etc., are kept in the room E, where those who wish to consult such works can examine them at their ease without interfering with the general readers, the room being provided with ample tables on which the cumbersome volumes can be opened out as desired. This room has a gallery at the level of the reading-room A. Other books and manuscripts are stored in the rooms F. The entrance to the building is under the room E, the stairs ascending to the main floor, the reading-room being reached thence by a half-way under D and stairs in the centre of the wing.

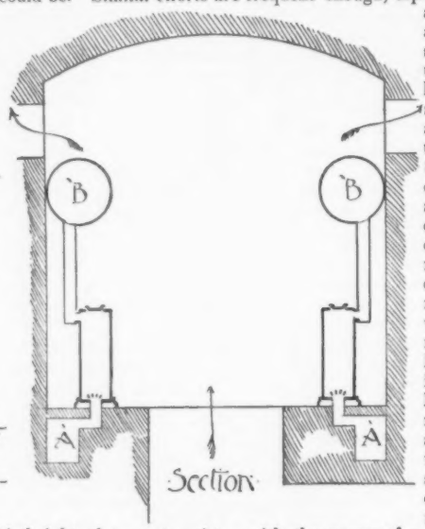
The storage facilities are well adapted for utilizing the whole of the space. The arrangement is somewhat after the order of that used in the Vienna University Library. The rooms are about nine metres high in the clear, the shelving being continuous from top to bottom, with their intermediate galleries extended across the whole area. The uprights for the shelving are made of single plates of iron extending the whole height, to which are bolted directly the channel-iron beams supporting the galleries. The sketch shows a plan of one section of the shelving. The shelves rest on flat-headed iron pins fitted into holes bored at intervals in the uprights. The floors of the galleries are of wood, everything else about the construction except the shelves being of iron. The lower portions of the building are occupied by various national collections, quite distinct from the library.

Returning to Munich: there is a system of heating in use at the Polytechnic Institute which is quite novel in its way. Steam is used for portions of the building, but for the main rooms heat is supplied from chambers in the cellar, where constant fires are maintained in small, portable stoves, disposed essentially as indicated by the drawing. These stoves consist simply of cylinders of cast-iron, twenty

centimetres in internal diameter, and about fifty-five centimetres high, with a small air inlet and grate at the bottom, a movable cover at the top, and a short elbow at the back. The cylinders are set on iron stands over openings from a fresh-air duct, the elbow at the back fitting into a small branch of smoke-pipe. The cylinders are not secured in position, but can be readily lifted out by iron handles, not shown in the drawing. Coal is used in the cylinders, the combustion being started at the top and allowed to work down until the fuel is thoroughly consumed. The supply of coal in one cylinder lasts for about four hours and a half. As many cylinders are fired as is necessary to supply the requisite amount of heat, fire being started at regular intervals in the different cylinders, so that in replenishing the fuel there need be no loss in the amount of heat supplied. If the temperature rises too high, one or more cylinders can be lifted off their stands, carried out of the chamber, and the fire in them extinguished. If more heat is needed, more cylinders can be fired. The heating-chambers are built of brick, of sufficient size to receive from sixteen to twenty-four such cylinders. The fresh air enters the chamber from out of doors through a grating in the floor, becomes heated, and is led to the rooms above through flues taken from near the top of the chamber. The air for the combustion in the cylinders is drawn quite independently from the cellar beyond, through the ducts A, the supply being regulated by valves which can be operated without entering the chamber. At B are the smoke-pipes.







The advantages of this scheme are obvious. It is economical of fuel, as when the combustion takes place in such small quantities it is easy to burn only the exact amount of coal required to produce a given temperature. Again, the stoves require very little attention and give a very constant heat, while fire is easily and quickly started or stopped as desired. The main objection is that the supply of fresh air to the rooms above is apt to carry with it a great deal of dust; sometimes, also, gases will escape from the cylinders, though with properly-proportioned smoke-pipes this is not likely to happen.

Under ordinary treatment one of the cylinders will last about one year.

C. H. Blackall.

NOTES FROM ENGLAND.[1] — IV.

MODERN PICTURES. — II.

In addition to the pictures by Mr. Millais already noted (and to sundry others I should like to describe were I not afraid of being prolix), I was fortunate enough to see, in a private collection, two of his earlier, most famous, and most characteristically perfect, works. They are very dissimilar, and yet they were alike in being, each in its own way, what I may call imaginative portraits. One of them was the "Gambler's Wife," which, when exhibited at the Paris Exposition of 1878, called forth an exceptional share of the unstinted admiration bestowed upon the artist's pictures as a whole. It is a comparatively small canvas, with a single figure, a beautiful young woman sadly fingering a heap of cards on a disordered table;—a "story-telling" picture of the right and not the mistaken sort, with a subject proper to pictorial, not merely to literary expression, and telling its own tale at the first glance without need of any title, still less of any explanatory catalogue-phrase. It is pathetic, dramatic, moral; while its motive is so exquisitely conceived and treated, that it would be a priceless treasure by reason of its pictorial beauty merely. Its grace of line, its rich, yet tender glow of color, its luminous depth of tone, its consummate precision yet breadth of handling are as remarkable as the strong, yet simple, unforced, unsentimental pathos of its meaning, everywhere expressed, but culminating in the lovely face. Wordsworth somewhere says that a work of art should make us either wiser, better or happier. This picture fulfils all these ends at once — for it is a lesson in life, a lesson in beauty, and a lesson in picture-making too.

The second canvas not only may be called, but definitely calls itself an imaginative portrait and of a real historic personality. It is an imaginative likeness of Swift's Stella, — a seated, life-size figure, conceived and treated as simply as any contemporary likeness well could be. Similar efforts are frequent enough, especially in English art — but almost always with a result that is either utterly characterless, or absurdly mistaken and inadequate. But this rendering of Stella — surely as difficult a subject as could well be chosen — is so full of character, so right and so adequate, that it not only satisfies wholly our imagination, but stimulates and clarifies it as though we had come for a moment into the actual presence of the woman herself, and had been endowed for that moment with the birthright of a great artist — with the power of reading the inmost soul beneath the outer surface. If ever a great artist had painted the real Stella from life, he could not well have left us a portrait more satisfying, or, spiritually, more true. Nor, as a mere picture, moreover, could it easily be equalled — masterly in drawing and in simplicity of arrangement, superb in color, and magnificently strong and tender in handling. Strong and tender are two adjectives one cannot very often use together in speaking of any modern painter. But they are the two which constantly suggest themselves when Mr. Millais is at his best — suggest themselves as applicable alike to the sentiment of his work and to the drawing, the color and the technique by which that sentiment is expressed. Virility of mood and manner is so rare a quality in English art that the possession of it alone would rank Mr. Millais very high. But when we remember that to this he adds feeling of a depth and purity almost if not quite unmatched in the contemporary world of art — then, indeed, we hesitate whom to place before him in his own line of work. To elaborate compositions of many figures, to dramatic renderings of mighty themes, to idealizations of the subtilest intellectual, or the most purely decorative, sort, his genius does not tend. But in his own line (there is none deeper, or more human, or more spiritual) in the line of portraiture, whether it be actual likeness-making or that imaginative likeness-making which is the noblest kind of *genre*-painting, he has not, I think, an equal to-day, and would hold his own with the great names of history. There is nothing attainable we should wish for more than that a collection of his best pictures might follow the Watts collection over the Atlantic. I did not see the latter in New York, and I have seen too few of Mr. Watts's pictures in England to venture upon any comparison—even if a comparison were really possible between artists so unlike. But I may, perhaps, say that a collection of Mr. Millais's pictures would contrast with the one just closed in two diverse ways. It would show a characteristically modern and characteristically English art, while the other showed an attempted resuscitation of the Italian art of a bygone time; and while it would not reveal so ambitious an aim, it would show a much more perfect realization of the aims suggested. It would show perfect clearness and artistic balance in conception, expressed in a perfectly accomplished technical language; — something less than this seems to have been the general verdict upon Mr. Watts's work.

It is extremely curious to note how faintly indicative of the best is the average of current English painting. Not only is the numerical proportion of very good works extremely small, but their quality is not even remotely suggested by the quality of those which rank below them. Bad English pictures, mediocre, average English pictures are worse, I think, than those of any other land, not excepting

[1] Continued from page 259, No. 518.

our own;—worse in their execution and worse too in the fundamental conceptions with regard to the very nature of pictorial art which they reveal. They are so crude and bald and unintelligible, they are so prosaic in spite of their sentimentality, and they are so homogeneous and uniform in the direction of their stupidity, that they do not in the least prepare us for the qualities which mark the few triumphant exceptions, these being the qualities of intense individuality, of extreme refinement, of grace and charm and tender sentiment. No art is so underbred, so vulgar, without, of course, being in the least sensual, so commonplace, so Philistine, in a word, as is the average art of England, while no art is quite so personal, so high-bred, so fastidious, so delicate, so poetic as is the art of England in its best examples. Not strength, as we might expect from the general trend of the national character, but tenderness—alike in conception and in execution—is its most constant, most conspicuous quality.

And the same essential difference between the best and the average which we find if we consider English art in its general mood and temper, we find to an even more marked degree if we consider it in its color. Go into those rooms at the National Gallery, where the selected English art of former generations is preserved, consider the total effect of any wall as a map, and study then the surface of any of its canvases. You will marvel at the richness of tone, the beauty of color you will see. Deficient, perhaps, in other ways these elder Englishmen were of a surety colorists by birth. Go then to the Royal Academy of the moment, and—if you have the courage — study it in the same manner. Mark the harshness, the glare, the crudity, the utter want of tone and harmony, and the hideous brutality of individual notes of color. Whatever else they may be, these modern Englishmen, you will decide, are surely the worst colorists on earth. But go now into some private collection where an amateur's sure taste has anticipated the selective action of time, and you will change your verdict once again. Just in color — not in drawing, nor in composition, nor in handling—will you find the strongest proof of power.

Given this essential difference of quality between the very best English work and that which ranks even next below it; given the facts that its producers are comparatively very few in number and each is apt to be singularly unequal in his own performance; and, finally, the fact that their results are not in the way of monumental public art, but of household cabinet art — given these facts, I say, and it will readily be comprehended that it is impossible to judge English painting fairly if we merely run through the public buildings of London and its monster annual exhibitions. We must seek the somewhat shy and fragile plant in the studio, where it grows, or in the private collections where its flowers are lovingly preserved. I, for one, had more than once seen all the stranger can usually see in London; but when I was fortunate enough not long ago to make acquaintance with Mr. Humphrey Roberts's collection (he has kindly given me permission to speak of it here), I felt that for the first time I knew the meaning of the words "English painting."

Large as is the collection most of the pictures are of comparatively small size; and for this reason, as well as on account of the intimate, delicate quality of the art they reveal, they are seen (or perhaps I should say they are *felt*) to far better advantage as they hang on the walls of the various living-rooms than they would be if massed together in a formal gallery. All are English pictures with the exception of a very few, and these are chiefly by the Dutch painter, Israëls, whose work is closely akin in sentiment, though not in executive manner, to the best work of England. And, as I remember, there is not a single painting which has not a very good right to hang among its admirable neighbors;—at all events, I remember very few collections in any land where so high a level of excellence seemed so seldom to sink below itself, I can only note of course, a few of the more impressive pictures. Several of them, I am sure, will be familiar to my readers, through etched or engraved reproductions, ranking as they do among the most famous, as well as among the best of recent English productions. First of all (first, that is, since Mr. Millais's two splendid canvases have already been described), I am tempted to speak of the work of Frederic Walker who died in 1875, at too early an age for his remarkable powers to have received their full development. It is thoroughly English work, alike in its excellences and in its limitations. It is exquisitely poetic in feeling, lovely in color, adequate and characteristic, but not brilliant in execution, and weakest in the point of composition. The "Harbor of Refuge," for example (which hangs among Mr. Roberts's water-colors, and has been etched by Mr. Macbeth), shows the quadrangle of a quaint and beautiful old building at Bray, on the border of the Thames. An old woman, supported by a young girl is slowly pacing the path which encircles the central grass-plot, where a mower is at work under the soft sunset light. It is a lovely *scene*, but not, I think, in the strict sense a well-composed *picture*. Yet perhaps if effects of line and mass had been more distinctly emphasized in it, there would be a certain loss of that vague, dreamy, naively tender sentiment, which is its greatest charm as it stands to-day. I think, at all events, that this charm is increased by the absence of emphasis, of accent, of brilliancy from the execution, which shows a soft, blended mellow kind of handling — a kind which with lesser men easily degenerates into washy weakness, and which with some subjects would be out of keeping, but which with Walker and with this subject seems artistic, lovely and essentially appropriate! And lovely is the term to use of the color, too, with its low, dull harmonies of ruddy tints vivified by a blooming pear-tree on the right. An exquisite picture indeed, and one which is poetic in the way a picture should be—not by trying to tell a "literary" tale, not by choosing a subject which is poetic to the mind alone, but by choosing a subject which is poetic to the *eye*, and suggestive to the mind no less, and by rendering it with poetic color and manner of expression. It affects us as might a touching elegy in verse, but the effect is wrought by elements of a purely pictorial sort. Much the same may be said of a small work in oils by the same hand. It is called "The Plough," and its subject is simply what the name indicates, the chief charm lying in the color — red cliffs beyond the upturned soil, and a rosy sky above. A third work, however, is of a quite different kind — Mr. Ruskin has made it famous by unstinted praise — is a simple water-color study of scarlet fungi, elaborated with the minutest care, yet with such breadth, such feeling, and such vivid beauty of color that it becomes not a mere botanical illustration, but a thoroughly artistic presentation of an artistically valuable theme.

Of George Mason — who was an older man than Walker, but who died at about the same time and whose art is similar to Walker's, though expressed with a completer technical mastery than the latter had attained to in his brief existence — there is one example in this collection, the landscape in Derbyshire. It shows all the tender pathos of his brush, though, by reason of its less striking subject, it is not so well known as, for example, his "Harvest Moon." Both these painters, it seems to me, reveal an English phase of the same sort of sentiment we find in the more vigorous but not more intense or poetic work of the great Frenchman, Millet.

But still nearer akin in sentiment to Millet, I think, is Robert Macbeth, who must not be confounded with his father, Norman, or his brother James, both likewise painters. A somewhat later comer than Mason and Walker, he is somewhat more "realistic" in his mood; yet not so much so but that his art may be classed with theirs, and not so much so but that his etchings from Walker's pictures have been singularly truthful in spirit to their originals. He is a striking proof of the inequality in performance to which I have more than once alluded as characteristic of English artists. No one who saw the canvas he exhibited in this year's Academy — shallow and commonplace in sentiment, crude in color, rough and careless in execution — could imagine him as painting "The Potato Harvest in the Fens," "The Arrest in the Fen Country," "The Flood in the Fen Country," or "The Ferry" — all of which are in Mr. Roberts's collection, and all of which, it will be noticed, deal with various incidents of life in the same district of England. It is a district which, alike in its natural forms and in its human types, lends itself well to Macbeth's better mood, which is prone to choose "realistic" subjects from humble life, yet to infuse them with a sensitive, subtile melancholy. It is the mood of one who loves the homeliest side of rural existence, and wishes to portray it simply, yet who nevertheless loves it and portrays it as it appears to a highly-cultivated liver in cities, as something familiar yet remote, natural yet pathetically alien, homely yet poetic by reason of its unlikeness to the sophisticated modern life beyond it. It is a mood that is as distant as the poles from the frank *actualité* with which current French art paints its peasants, and as distant from the false and trivial "idealization" with which inferior artists all the world over try to give charm to their results. It is akin in one way, I repeat, to the mood of Millet — akin in its choice of subject-matter, in its love of truth, in its unforced natural pathos. But it is different in another way, by reason of the remoteness, aloofness of attitude to which I have already referred. Macbeth is in vital sympathy with the themes he represents, but his sympathy is imaginative while Millet's sympathy was that of a brother in birth and circumstance. The peasant strength of Millet's work is lacking, too, while in their place we have a delicate, almost morbid refinement, which does not reveal itself, I say, in any sentimental travestying of the subject, but (in some intangible, indescribable way) as having characterized the painter feeling when he saw that subject. Jules Bréton, in some of his smaller canvases, comes nearer than any French artist I can name to working like Macbeth; but even here the likeness is far enough from approaching to identity. There is more dramatic intention (and it is admirably conveyed) in Macbeth's work than there is in Walker's, but there is something of the same lack of skill in composition. Only in one of the four pictures I have named — in "The Ferry" — is there so effective and beautiful an arrangement of lines and masses that we are struck by it as by a final charm completing the charming, the touching and impressive whole.

Albert Moore is an artist of a very different kind, having nothing whatever in common with these others save a fundamental, underlying delicacy and refinement of feeling. He works on decorative lines — produces charming figures which are quite devoid of soul, of any intellectual or emotional quality, but for the mere delighting of the eye have an extraordinary value. He has often been imitated, but very seldom with success; for art of this kind must be perfect within its own limits, else it is absolutely nought. It must be perfect in line and color and tone and touch, for there is nothing beneath these to console us if they fail to satisfy. If not perfect it inevitably sinks into thin, tiresome inanity, very likely into half-ludicrous caricature. Mr. Moore's art has often enough been caricatured and (in justice to his own fame I must add), occasionally by his own hand. But Mr. Roberts's specimens are exquisite. One especially, a small canvas with the figures of three young girls who are leaping over a wall, is a ravishing little "symphony in yellow," and as graceful in line as gracious in its clear, light color and accurate, dainty touch.

M. G. VAN RENSSELAER.

THE ILLUSTRATIONS.

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

THE CATHEDRAL AT COUTANCES, FRANCE.[1]

THIS is certainly one of the most interesting of the many churches in Normandy to which architectural pilgrimages are nowadays made. It is, moreover, one of the earliest complete pointed churches in France, as it dates from the first half of the thirteenth century. The western spires and their curious supporting spirelets have a very unusual slender elegance, and the simplicity of the lines makes them more than ordinarily impressive. Another feature that impresses itself on the memory is the curious manner in which the vault-ribs are carried down onto corbels and colonnettes, to die away in the surface of the wall.

SANTA MARIA MAGGIORE, ROME, ITALY.

Although known by other names, this building, the largest of the eighty or more churches in Rome dedicated to the Virgin, is best known by the title given above. The building in its original basilican form dates from the fifth century, being usually assigned to the time of Pope Sixtus III, A. D. 432. Although only a three-aisled basilica in plan, whereas St. John Lateran has five aisles, it is considered to have one of the finest interiors of its class. The internal dimensions are, length 250 feet, width 100 feet. Of the original edifice the nave is still retained without material alterations. The exterior, however, has been subjected to alterations and restorations, according to the manner of the times. Thus, in the twelfth century certain mediæval additions and changes were made; in the fourteenth century the campanile was given its present form by Gregory XI; in the fifteenth century the mediæval alterations were expunged and the present symmetrical arrangement of the church and its accessory buildings was fixed, and in the following century other chapels were added. The final alteration was however undertaken by Fuga, about 1743, in the time of Benedict XIV, who designed the façade shown in the view we publish.

HOUSE FOR G. B. CHASE, ESQ., MARLBOROUGH, N. H. MESSRS. VAN BRUNT & HOWE, ARCHITECTS, BOSTON, MASS.

SECULAR TOWERS — MAINLY LATE MEDIÆVAL.

As these towers are grouped together simply as suggestions in design, it does not seem worth while to give any facts concerning each particular example.

THE PRINCIPLES OF HOUSE DRAINAGE.[2]

Childrens Hospital. Finsbury. London: Eng.d J.D. Sedding. Arch.t

NOTWITHSTANDING the already long list of publications relating to house-drainage and plumbing, the appearance of a new book on this important subject always excites a certain interest. The book before us, moreover, small as it is, differs in character from the usual books treating of this subject. It is not a mere description of the many forms of pipes, traps and fixtures, and the manner of setting these and arranging the whole system in dwellings. Nor does it merely give in a concise form the usual rules on house-drainage. The book goes a step farther, inasmuch as it is a *critical review* of present plumbing methods and apparatus.

Some of the more serious defects of house-drainage have from time to time been alluded to by sanitary writers. They have been occasionally recognized and admitted by some plumbers and architects, and it may even be said that, at least in a few instances, manufacturers of plumbers' materials have acted upon the suggestions thrown out by such reformers. Yet, taken as a whole, our plumbing systems of to-day cannot be said to exhibit much vital progress compared with work done a few years ago. It is true that the radical defects and blunders of old-fashioned plumbing-work are now no longer incurred. The soil-pipes are always ventilated by extensions above the roof, the house-drain is trapped, a fresh-air inlet is provided at the foot of the house-drain for circulation of air, and to every fixture is attached a separate trap, and where the traps are of the usual S form, a back-air pipe is connected with the crown of the trap to prevent siphonage. Beyond these few general features little improvement is apparent. The common system of soil and waste pipes is rarely jointed in a gas and water-tight manner; most water-closets in use are objectionable in construction, flushing and manner of setting; wash-basins, sinks and tubs have more or less complicated appendages, and are not constructed on correct principles, particularly as regards their manner of discharge. Traps are often chosen of a complicated form, retaining filth, or else they are not of such a kind as to retain their water-seal under all circumstances.

Mr. Putnam calls attention in his book to all these defects, and it may be stated at the outset that he does so in a perfectly fair and impartial manner. Being much impressed with the value of the contents, we have read the volume twice from beginning to end, and we have found no statement of importance to which we should take exception. The intention of the author was to "make no statement which is not founded on facts recognized by all or easily demonstrated, nor to follow any course of reasoning which is not perfectly clear and logical." In this laudable endeavor he has succeeded admirably, and, after a careful reading of the pages, we have no hesitation in pronouncing the work one of value and of importance to architects, sanitary engineers, householders and plumbers, all of whom would derive profit from a study of the principles so clearly explained. Indeed, we have reasons to apprehend a wholesome reform in house-drainage, if the principles so ably set forth should become more generally accepted. The facts mentioned will, we trust, be a sufficient justification of the somewhat detailed review of the book.

Mr. Putnam frankly announces in the beginning of his lectures that the book contains, among other matter, the description of a number of new sanitary appliances, some of which have been patented to him. He states that "these devices are the outgrowth of a careful, practical study of plumbing made from the unprejudiced standpoint of the architect working for the interest of his client," and he adds that "they are the *result* and not the *cause* of the investigations." These statements, we presume, would suffice with narrow-minded persons, to cast suspicion upon the book. An unprejudiced reviewer, however, will soon be assured, after reading a few pages, that notwithstanding the fact that Mr. Putnam has some improved devices to offer to the public, the whole subject is treated without any bias whatever. At least, this is the conclusion to which we have come after an unusually careful perusal of the book, the reading of which is sure to afford, to all disinterested minds, as it did to us, much instruction and profit.

Thus much as regards our general impression of the book. Its contents are divided into three principal chapters, the first of which treats of traps, the second of plumbing fixtures, and the third of soil and waste pipes. In a general introduction Mr. Putnam points out that the architect and the sanitary engineer are the persons from whom radical improvements in plumbing may be expected, and commends the growing practice of architectural firms employing regularly a sanitary engineer to take charge, in coöperation with the architect, of the department of heating, ventilation and plumbing. A concise statement is next given of the leading principles which should govern the planning and construction of the plumbing work in all classes of buildings. The essential features, according to Mr. Putnam, are: simplicity, accessibility, avoidance of mechanical obstructions, tightness of joints, soundness of materials, ventilation, flushing, automatic operation, noiselessness, economy, and prevention of waste.

This classification of requirements may be unreservedly endorsed. It is only seldom, however, that we find them fulfilled and observed in practice. In the best plumbing-work of to-day simplicity of arrangement has given way to complexity and intricacy, and the result is a largely increased original cost, and heavy and frequent bills for subsequent repairing of the work. Worse than this is the unavoidably resulting insecurity of the plumbing. How rare, again, is it, even at the present day, to find a house with all supply and waste pipes in full sight, with fixtures openly arranged, and with every part of the plumbing fully accessible for inspection, repairs and cleansing. How seldom are the fixtures and traps of a house free from mechanical obstructions, such as flap-valves or hinged-pans in the closets, balls or valves in the traps. How rarely are the joints of a system of soil-pipes made permanently water and air tight, and free from leakages due to changes of temperature, settling of the house, shrinkage of floors, etc. How often do we find houses piped with brittle and flimsy cast-iron pipes of uneven and insufficient thickness, and with lead-supply and waste-pipes of insufficient strength adopted, to effect an unwise saving in the first cost of the work. How seldom is the principle observed that every plumbing-fixture should be constructed so that its discharge will have a powerful flushing effect upon the traps and waste-pipes, in order to remove completely and instantly all foul matters and kitchen grease delivered into waste-receptacles. How few water-closets in houses are arranged in a manner so as to be entirely noiseless in operation. How often is economy in construction sacrificed to mere outward notions of fashion or comfort, as for instance, by unduly scattering fixtures over all parts of a house, instead of arranging them in vertical clusters or groups. Finally, how rare it is to find any regard paid to the all-important consideration of water-waste prevention. With leaky faucets, ill-arranged valve-closets or hopper-cocks, service-pipes run on outside walls, without protection against freezing, no wonder that in our large cities the consumption

[1] From Cotman's "*Antiquities of Normandy.*"

[2] *Lectures on the Principles of House-Drainage*, delivered before the Suffolk District Medical Society (Section for Clinical Medicine, Path logy and Hygiene) and the Boston Society of Architects, at the Massachusetts Institute of Technology, by J. Pickering Putnam, Architect. Boston: Ticknor & Company, 1886. 1 vol., cloth. Price 75 cts.

No. 521 American Architect and Building News, Dec. 19 1885

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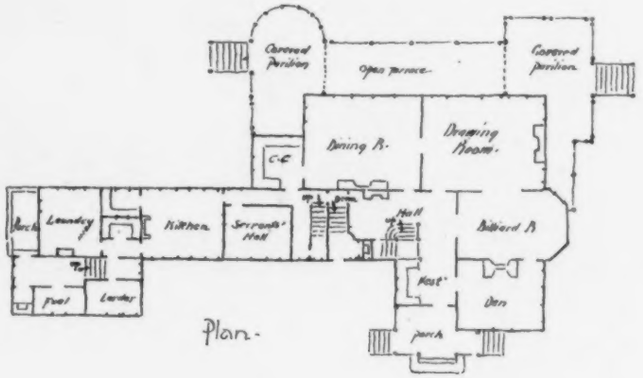

Plan.

Country House at Marlborough N.H.,
for Geo. B. Chase Esq.,
Van Brunt and Howe Architects,
60 Devonshire St. Boston.

G. Wilson Potter Del.

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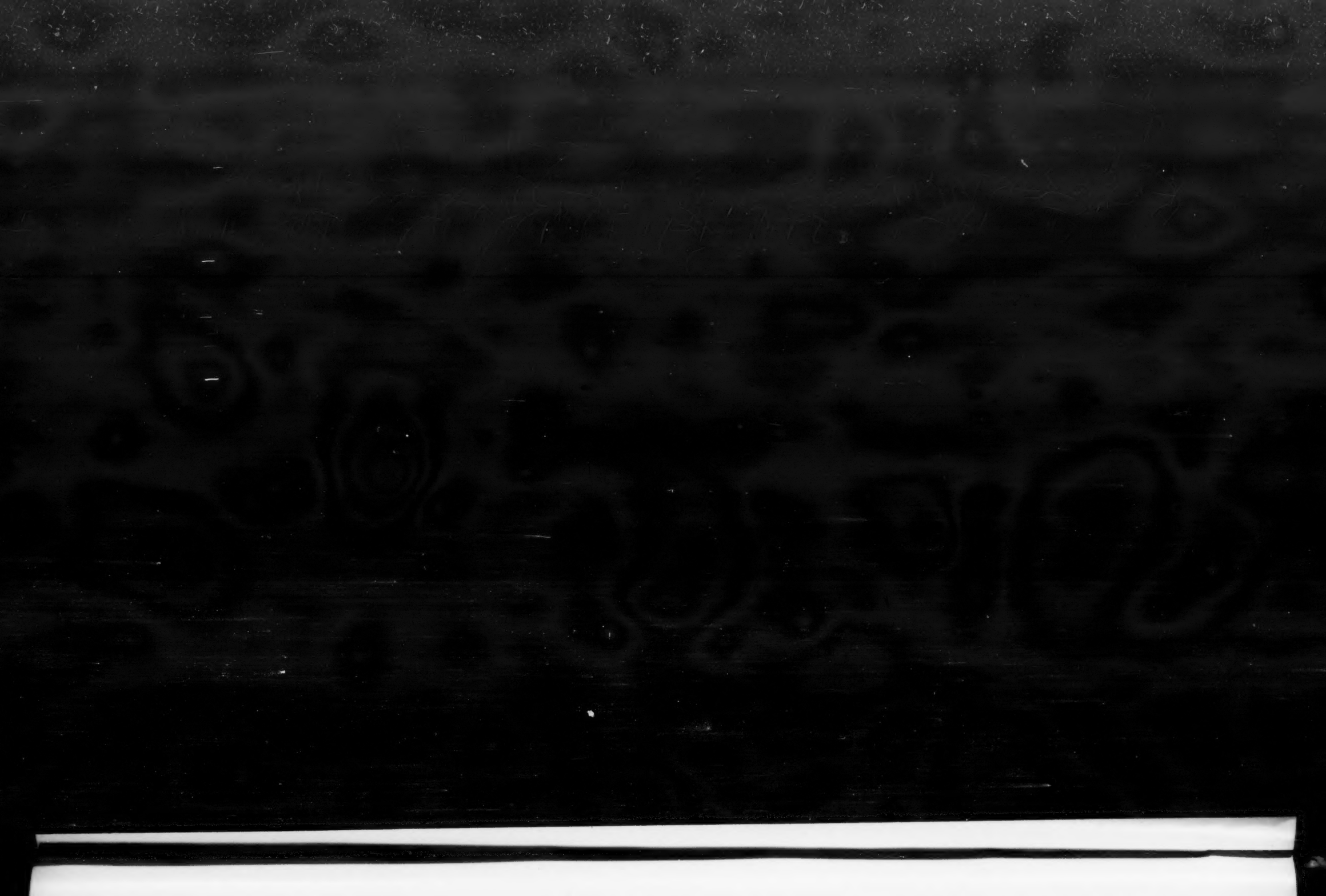

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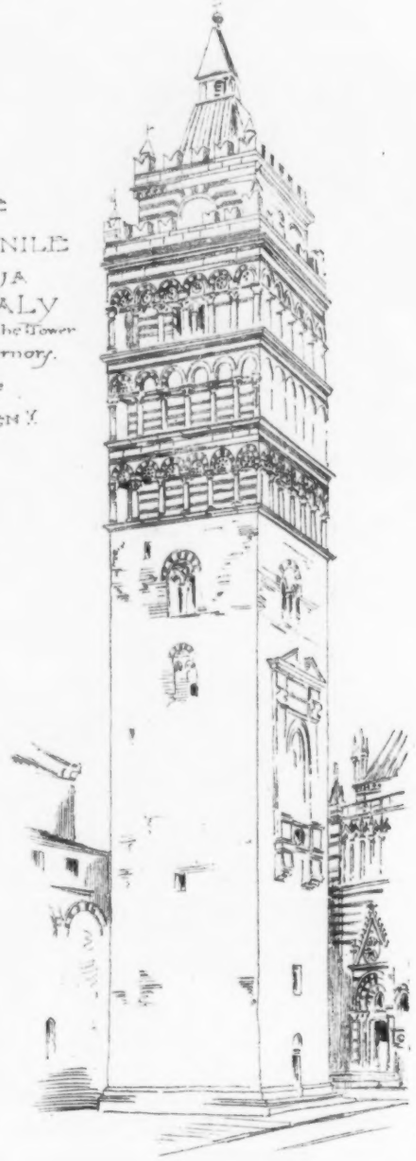
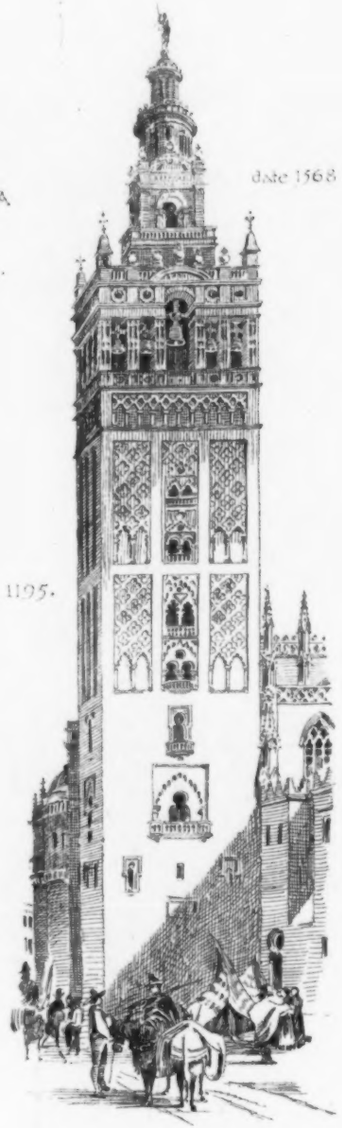
THE CAMPANILE PISTOJA ITALY
originally the Tower of the Governors.
date from the 12TH CENT.



TOWN HALL TERMONDE · FRANCE
16TH CENT. from sketch by T. H. BACON.

THE GIRALDA SEVILLE · SPAIN.
date 1568.
date 1195.

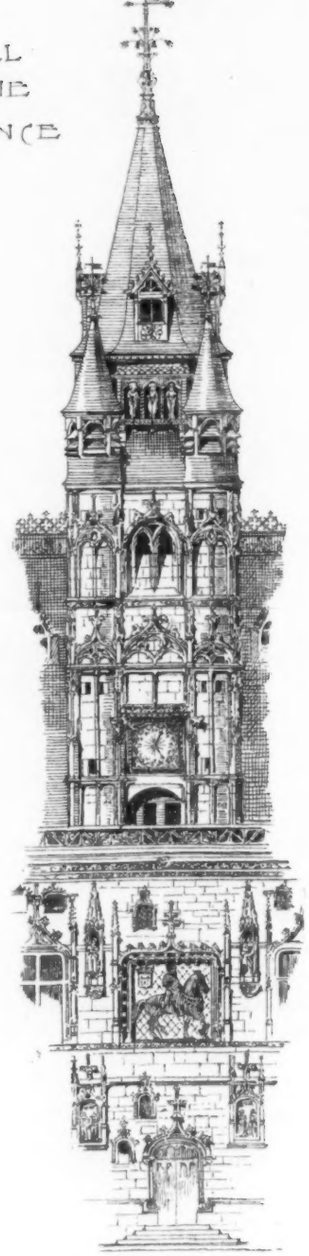


TOWN HALL COMPIÈGNE

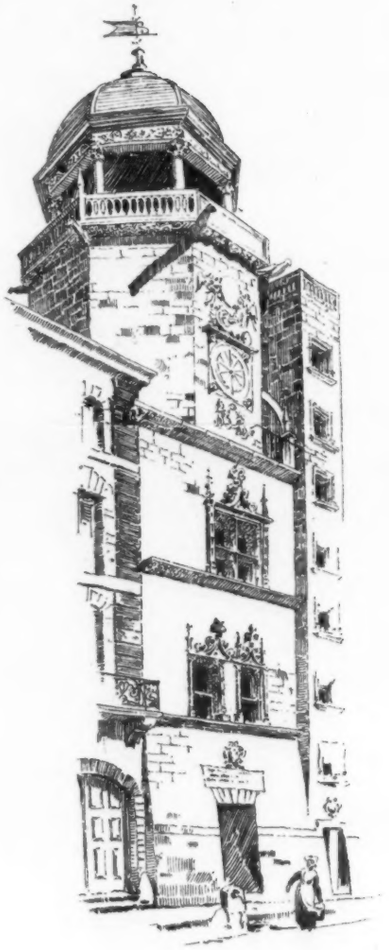
SECULAR TOWERS.

SECULAR TOWERS:

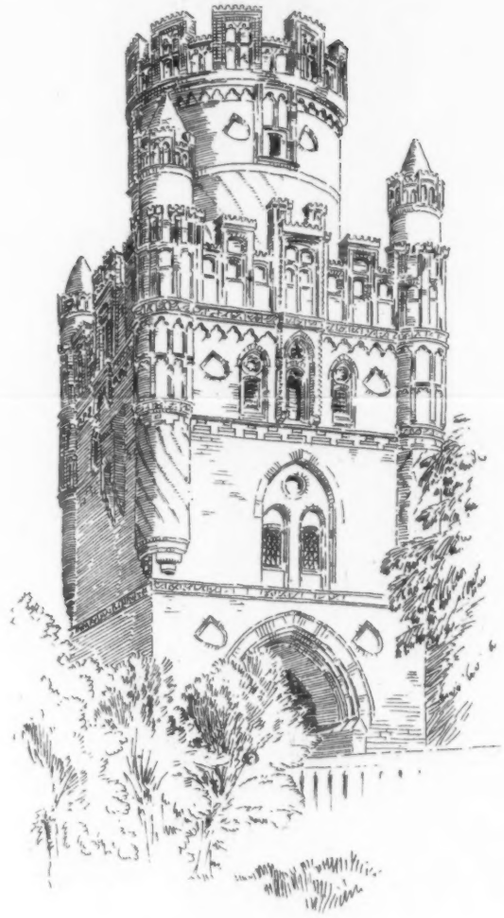
(MAINLY LATE MEDIÆVAL)



TOWN HALL
COMPIÈGNE
FRANCE
16TH CENT.



CLOCK TOWER
RIOM · FRANCE
AFTER SKETCH BY R. D. ANDREWS IN THE
BOSTON A. A. SKETCH BOOK.



THE INGLINGER GATE
STENDAL . GERMANY.

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Maggiore, Rome.

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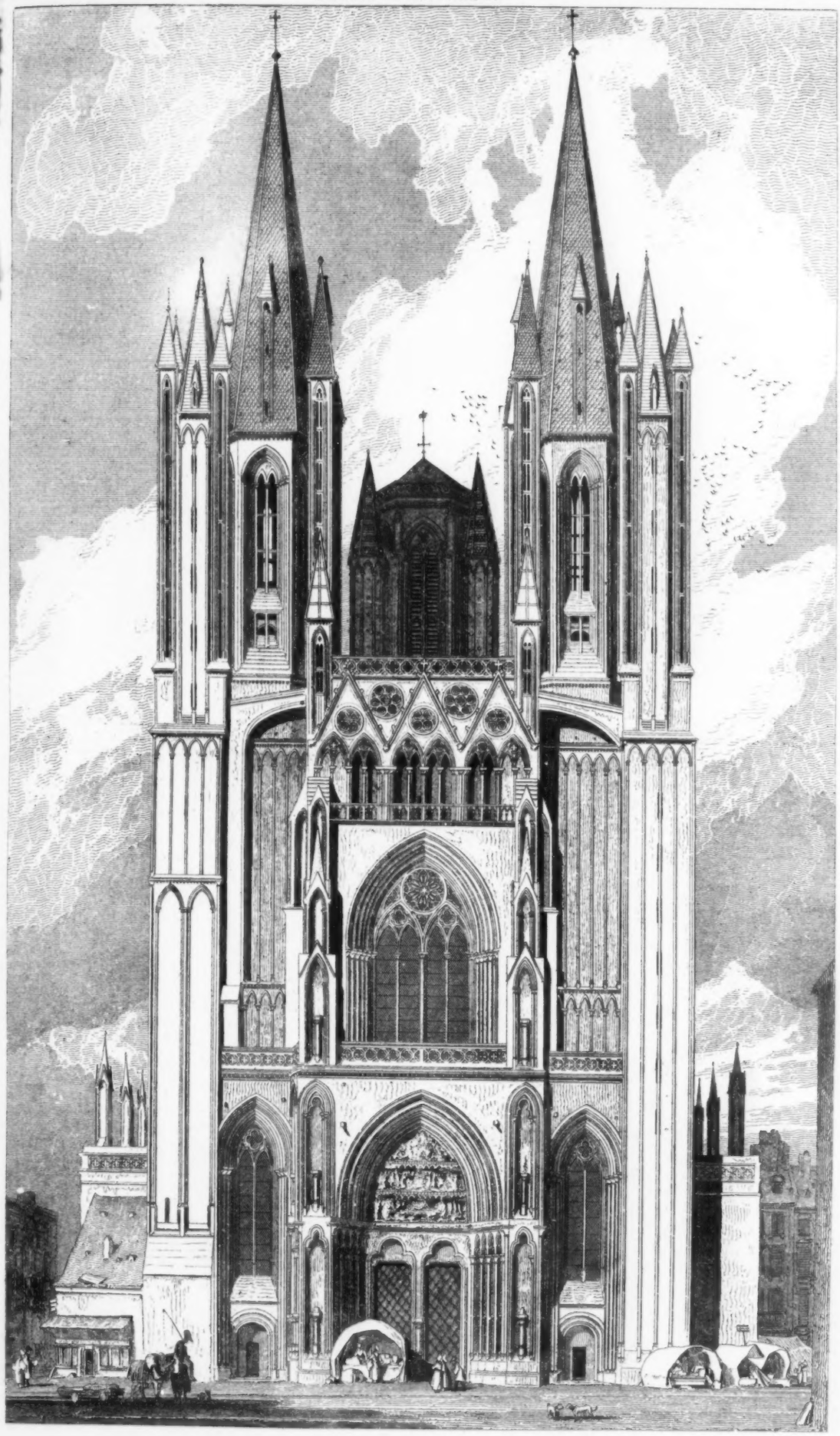


CATHEDRAL CHURCH OF NOTRE DAME, AT COUTANCES.

HELIOTYPE PRINTING CO. BOSTON

of water has reached such a height as to require the enactment of strict measures, such as the application of water-meters, or a house-to-house inspection, to detect and prevent the prevailing reckless waste of water.

Traps are discussed at length, and the causes clearly set forth which singly or conjointly tend to destroy their protecting water-seal. As one of the principal enemies to the security of traps the action of siphonage is explained, and the methods pointed out by which it may be prevented. The first method, and the one now almost universally recommended, and enforced by law in cities having plumbing regulations, is the venting of the traps by so-called "back-air" pipes. The second method consists in employing large reservoir traps, such as the pot-trap. The third method, and the one which Mr. Putnam recommends, is to use traps so shaped and constructed as to be both anti-siphonic and seal-retaining, yet at the same time self-cleansing.

Concerning trap-ventilation, the author justly states that it adds greatly to the cost and complication of the work. He adds that numerous and careful experiments have established the fact that trap-ventilation is not always efficient in preventing siphonage, while it is always more or less active in destroying the water-seal through evaporation. The second method involving the use of reservoir traps is characterized as inexpensive and simple, and much more efficient in resisting siphonic action than the first. It cannot, however, be recommended, since traps of this description are, one and all, miniature cesspools, retaining filth in the house and thus violating a cardinal rule of house-drainage. The third method is justly stated to be the simplest and least expensive of all. It is, moreover, more reliable and does not involve the objectionable retention of filth in the house. It requires, as a *conditio sine qua non*, the most thorough ventilation of all lines of soil and waste pipes, the use of branch waste-pipes restricted in length as much as possible, and a powerful flushing of traps and waste-pipes from correctly-constructed plumbing fixtures. It is explained that an abundant aëration of the short branch wastes may be secured both by diffusion of the air in the ventilated soil-pipe and by the influx of air, induced with, and after, the water-flushing at each use of the fixture.

The three methods briefly mentioned are carefully examined in detail. An apparatus used by the author in his lectures to test the efficiency of traps is illustrated, and a concise summary given of the experiments made. From these Mr. Putnam concludes that the disadvantages of trap-ventilation are as follows: —

1. It destroys the seal by evaporation when ordinary S-traps are used, with the vent-pipe taken from the crown.
2. It does not accomplish its object, and hence affords a false sense of security.
3. It increases the unscoured area of the trap, making it a cesspool.
4. It retards the outflow of the waste-water, owing to the friction of the air-current entering with the water during the discharge.
5. It renders the discharge noisy.
6. It complicates the plumbing, and adds to the danger of leakage through bad jointing and increased material.
7. It aggravates the danger arising from capillary attraction.
8. It seriously increases the cost of plumbing.

The author then shows how it is possible to construct a trap which will be anti-siphonic, yet self-cleansing. The various steps gone through before arriving at the final design are clearly explained and illustrated. The result is a trap, secure against back-pressure, evaporation, capillary attraction, self-siphonage and siphonic action, whose body resembles in outward appearance a small pot-trap placed horizontally, while it has in principle the self-scouring form of the S-trap.

Part II discusses plumbing fixtures. Speaking of wash-basins, Mr. Putnam correctly says that hitherto wash-basins and bath-tubs have been selected purely from a standpoint of convenience, appearance and economy, while sanitary considerations have been entirely overlooked. His criticisms are mainly directed against the size of the outlets of basins and tubs, which are too small in proportion to the size of waste-pipe and trap, with the result that both the trap and the pipe remain imperfectly flushed.

He condemns further all concealed overflow passages as liable to become fouled without the chance of cleansing through flushing action, and as being placed so that they cannot be reached. The use of the plug and chain device is also condemned as well as all concealed basin and bath-tub waste-valves. Mr. Putnam suggests instead a new form of wash-basin, with a large basin outlet, located at the rear part of the bowl, and having an independent, visible and accessible standpipe overflow. The basin is a radical departure from the ordinary forms, with many important advantages, and architects and sanitary engineers, whose duty it is to advise clients in regard to improved fixtures, would do well to study carefully Mr. Putnam's device. Similar improvements are suggested for bath-tubs and pantry sinks, and the use of a flush-pot recommended for kitchen sinks, in order to collect the usual trickling flow, and to dispose of grease by sudden and powerful flushing.

A sub-division of the second part treats of water-closets. Here too, we find Mr. Putnam's views in accord with those of all advanced sanitarians. After an unreserved condemnation of the pan-closet, he clearly explains the defects adhering to the modern valve and plunger closets, and shows why it is advisable to avoid all mechanical seal-closets. He is rather severe in his criticisms of the old style of hopper-closets, the long and short flushing-rim hopper, which have no large body of standing water in the bowl. Although we are prepared to admit the superiority of improved hopper-closets over such dry hoppers, yet we know of closets of the latter kind which give excellent satisfaction, and Mr. Putnam has probably had a similar experience, for, farther on in his book, in speaking of trough-closets and latrines, he recommends as a good substitute for the latter, a "row of good hopper-closets, with treadle, door, or seat-attachment for automatic flushing."

Several improved hopper-closets are illustrated and described, amongst others a very ingenious, yet simple, form, with automatic supply-pipe, devised by Mr. Putnam.

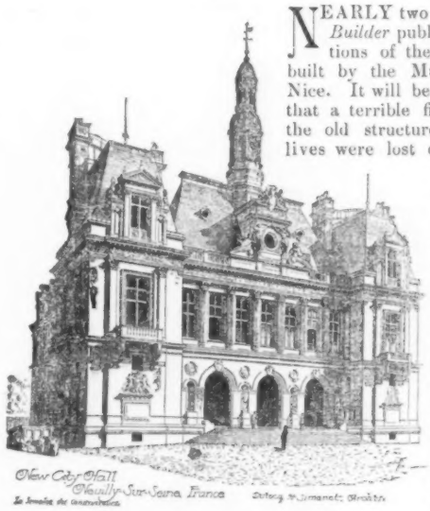
Of slop-hoppers and urinals, it is said that while they are necessary for hotels or large club-houses, railway-stations, etc., they are objectionable, and, therefore, should not be used in private houses, where a good hopper water-closet, set in an open manner without wooden enclosure, may take their place.

Part III of the book treats of soil and drain pipes. In the criticisms of the usual form of pipe and the manner of making pipe-joints, we find the same spirit of fairness and justice which characterizes the whole work. The defects of the ordinary hand-calked joint of bell-and-spigot pipes have long been recognized, and this has led to the substitution, in some recent work, of wrought-iron pipes for the usual cast-iron pipes, the pipes being used in greater length, with a corresponding reduction in the number of joints, and the pipes being jointed in the same manner as steam-pipes, *i. e.*, with air and water-tight screw-joints. Mr. Putnam offers a design of a new pipe-joint for cast-iron pipes and fittings, which may be broadly characterized as an adjustable flanged-joint with lead washers or gaskets for packing, the joint being made tight by compressing the pipe ends with bolts and nuts, screwed up with ratchet-wrenches. With this kind of pipe connections between lead waste-pipes, and the main soil-pipe system are made without the use of brass ferrules in a safe and much simpler manner.

Having described his improved soil-pipe joint, the author concludes this part of the subject by giving rules as to size and general arrangement of the piping. He contends that "the size of soil-pipes should not exceed four inches," a view eminently correct, but very seldom entertained by architects or builders. Farther on he says: "All the piping of a house should be in full view. Nothing should be walled in or covered over and rendered inaccessible. One of the first rules of modern sanitary work is to bring everything out of the darkness into light and air, where defects, if they occur, can at once be detected and removed. We are accustomed to running our steam-pipes in plain sight, and rendering them by gilding or silvering as ornamental as possible. The same custom is now beginning to apply to our plumbing pipes," to all of which we can give our most unqualified approbation. In conclusion, the peppermint and smoke tests are described, and their application to test the soundness of a system of house-drainage, recommended.

Many of the subjects referred to have been discussed by Mr. Putnam at length in an excellent series of articles on "Sanitary Plumbing," which appeared some time ago in the *American Architect*, but this new little book will be found very handy, inasmuch as it gives in a condensed form, the results of the author's original investigations. Mr. Putnam is already well and favorably known to the architectural profession by his large treatise on "*The Open Fireplace*," published several years ago, and it is to be hoped that his new book will meet with the same deserved appreciation.

THE VENTILATION OF THE NEW MUNICIPAL THEATRE AT NICE.



NEARLY two years ago the *Builder* published illustrations of the new theatre built by the Municipality of Nice. It will be remembered that a terrible fire destroyed the old structure, and many lives were lost on that occasion. In the article accompanying this illustration we had the pleasure of congratulating the architect, M. Aune, for the taste, skill and promptitude with which he had raised a magnificent new theatre almost as rapidly as the ashes of the old one were cleared away. But at the same time we lamented the absence of any scheme of ventilation. This was left to the accident of doors and windows, and we further pointed out

that in a town like Nice, where so large a proportion of the visitors are invalids, good ventilation in places of public resort was of more than usual importance. Finally we suggested that Nice might follow the example set by Geneva, where the Grand Theatre is a model of efficient ventilation.

All these remarks, we have been informed, were faithfully translated into French, and brought to the knowledge of the mayor and municipality. With commendable energy letters were at once written to the firm who had so successfully ventilated the theatre of Geneva, and whose work met with the approval of the Fourth International Congress of Hygiene, held at Geneva in September, 1884. Messrs. Geneste & Herscher were forthwith invited to Nice, and entrusted with the ventilation of the new theatre. The building was opened for the first time last season, and the result proved most satisfactory.

A few years ago the grand theatre of Vienna was the only establishment of the sort on the Continent which could be described as scientifically and successfully ventilated by the aid of a motive power yielding exactly the volume of air required. The comfort attained by such a method was so great that at Frankfort, Brussels, Geneva, and finally Nice, the example has been followed and in some respects improved upon. Remembering the suffocation endured in the old theatre of Nice, nothing could have been a greater and more agreeable surprise than the ease and fresh air enjoyed in the new structure. The ventilation is based on the principle that the air must not be supplied irregularly and from particular points, but should be admitted in horizontal layers, which, rising gradually from the entire surface of the floor, travel slowly up to the roof without occasioning any currents likely to disturb the spectators. But, further, the air must be so prepared as to be in a proper condition for breathing before it is admitted into the theatre. In other words, it must be warmed in winter and cooled in summer.

On visiting the theatre of Nice, we found that these conditions had been realized in the following manner. Over the entire surface, occupied by the stalls and the pit, the air is admitted by means of four hundred apertures. These are made under each chair and protected by iron gratings. They measure about six inches by ten inches. The openings therefore present a large surface evenly distributed; the air consequently travels slowly, in spite of its abundance. All these openings are fed by means of shafts into which the air is pumped by a mechanical ventilator. A small gas-engine suffices to put the fan or wheel into motion. In winter the air is previously warmed by a number of hot-water coils. Care is taken, however, not to allow any portion of this air to attain a temperature exceeding 62° to 65° Fahrenheit, and thus it does not lose any of the qualities of fresh air. There is in fact a mixing-room, where the warmed air is diluted with cold air that has not passed over the hot-water coils; and with a little personal superintendence it is easy to obtain precisely the required temperature. During the summer the air is cooled by means of a water pulverizer, which also adds a pleasant moisture to the atmosphere.

The theatre, it is important to note, is not warmed by the air pumped in for breathing purposes. If this were done, the air, to combat the refrigerating effects of the windows, walls, and other cold surfaces, would have to be heated to a higher degree than pleasant or wholesome for breathing purposes. All the parts surrounding the auditorium, the passages behind the boxes, vestibules, etc., are carefully warmed by hot-air flues.

The surrounding temperature is thus maintained at about 65° Fahrenheit. No system of ventilation is provided for this part of the house, nor, indeed, are there any special air-shafts to supply the boxes.

The ventilation is not so elaborate as at Vienna or Geneva; but, on the other hand, it is less complicated and not so expensive. For a theatre of moderate size the success achieved at Nice shows that it suffices if the entire floor of the house admit an up-current of air. This will ventilate sufficiently the front portion of the boxes, the part precisely where the spectators are sitting during the performance. By carefully separating the warming and the ventilating, the attendants remain master of the one and the other. More air or more heat can be supplied according to the necessities of the moment; but if the one could not be given without the other, very awkward difficulties might occasionally arise.

The theatre itself is illuminated by 727 gas-jets; but with the passages, crush-room, etc., we have a total of 1,700 gas-burners. During the representation, for instance, of "Faust," 78½ cubic metres of gas were burned per hour; and as the entertainment lasted from half-past seven to half-past twelve in the night, 393 cubic metres of gas were consumed. The gas required for the engine, which is only of six-horse power, amounts to one cubic metre per horse-power per hour. The ventilating-fan generally pumps 14,000 cubic metres of air into the theatre per hour during the winter, and 18,000 cubic metres in the summer. As there are 1,500 seats in the theatre, this would amount to nine cubic metres per head per hour in winter, and twelve cubic metres in the summer. We must also allow for the fact that every seat is not always occupied, and there is a certain amount of accidental and supplementary ventilation due to the opening of doors, windows, etc. To prevent this accidental ventilation becoming in any way unpleasant, care is taken that the passages and outer rooms should always be two or three degrees warmer than the theatre; thus any current caused by the sudden opening of one or more doors is always a warm, and therefore not an unpleasant current.

The observations made during various performances show that on an average the temperature of the stalls and pit is equal to 63° or 64° Fahrenheit during the whole evening. In the gallery the temperature is the same during the first hour, but during the second hour it rises to 65° Fahrenheit, and towards the end of the performance it may go as high as 67° or 69° Fahrenheit. At the same time the passages, vestibule and various annexes had a temperature varying from 65° to 67° Fahrenheit. The fresh air coming into the theatre underneath the chairs in the floor of the house travels at the rate of 15 to 18 centimetres per second, according to the atmospheric pressure and the amount of gas burning at the time. In summer the speed increases to 20 or even 25 centimetres per second, but the current is so evenly diffused that it is not felt by the spectators.

Under these circumstances the beauties of the new theatre can be enjoyed without any inconvenience. There need be no fear of taking cold, or of enduring the pain of a "theatre headache." For a health-resort like Nice such advantages, we repeat, are of the greatest importance, and will not fail to attract people to the town and augment the receipts of the theatre.

In the decoration and ornamentation of the theatre, which were not complete when we described its main architectural features, a great deal has also been done to attract the admiration of visitors. The staircases and vestibules are most capacious and highly ornamented. Two handsome statues representing female forms holding up lamps at the foot of the principal flight of stairs are due to J. Coutant, who won the competition for the Jeu de Paume de Versailles and the Gambetta statues. In the crush-room there are some fine paintings representing views of Nice and the Bay des Anges, with angelic nudes bathing and rising from the foam of the blue waves. These paintings are by M. Costa, a native artist; but for the scenery and stage machinery it was necessary to employ Messrs. Diosse, of Lyons and Geneva. Altogether, what with the painting, the sculpture, the decorations, the white stone and the red columns of Verona marble, the ample space, the broad passages, majestic staircases, and, above all, the fresh, pure air supplied in such abundance, even in the hottest weather, the theatre of Nice may be considered one of the most attractive places of entertainment of Europe. It remains to be seen whether in the selection of his performers and performances the *impressario* will prove himself equal to the exceptional advantages afforded in this model theatre. In all cases the architect, M. Aune, and the ventilating engineers, Messrs. Geneste & Herscher, have most fully and satisfactorily fulfilled the difficult and important task with which they are entrusted. — *The Builder.*

THE FOREST SUPPLY IN THE UNITED STATES.

THE prolific growth of timber trees in the United States, and the vast extent of their forests, induced customs and methods of construction among the earlier settlers which have resulted in the extravagant use of timber for all purposes, and systems of timber cutting without any attention to the renewal of forest growth, which bid fair to result in great embarrassment to the lumber trade.

Within the last twenty-five years, the price of white pine at the sea-coast has trebled, and that of hemlock doubled. At the present rate of consumption there is about eleven years' supply of white pine now standing in the Northern States comprised in the area bounded by the Atlantic Ocean on the east, the Dominion of Canada on the north, the upper portion of the Mississippi River on the west, and the Ohio and the Potomac Rivers on the south.

In the Southern States the estimated supply of the long-leaved pine (*pinus australis*) is sufficient for many years, but much of it grows at a distance from navigable rivers and railway lines, and the supply convenient to lines of transportation has become so reduced that there is a scarcity of this timber for millwork and shipbuilding.

The railways of the country annually require about 60,000,000 ties, or the product of 500 to 600 square miles of growth of such timber, and at places convenient to their lines. In Canada, the annual cutting amounts to 2,000,000,000 feet, board measure; and in the United States, according to their last census, the cutting there amounts to 224,000,000 feet, board measure.

It is considered that the resources of the soil would be adequate to replace this immense drain upon its production of the consumption of timber if care was taken to foster the new growth of forests and if forest fires could be checked. The ravages of forest fires result in the destruction of greater values than the losses of buildings by fire. The subject has been forced upon the consideration of the people and the question of its remedy is receiving serious attention, but the most judicious plans lack the co-operation of those engaged in timber-cutting until the supply in that immediate locality becomes nearly exhausted.

The results of such efforts are shown in the statute laws of the

legislature of the several States composing the United States. In this connection it may be said that while the Congress of the Federal Government enacts laws of a national character, each of the several States exercises local self-government, subservient to the general government through laws passed by their legislatures; and this question of tree-preservation comes within the scope of the State authorities.

Seven of the States have no legislation on the subject. Kansas repealed such a law, and Texas enacted a law giving to railway corporations the right to enter upon any land along their line and cut timber for constructive purposes; a law which can be understood when it is considered that only a small portion of its immense area has been occupied by actual settlers, and the enactment is a portion of the legislation designed for the promotion of railway construction as an efficient means for encouraging immigration into that State.

The laws in the remaining States for the furtherance of tree culture are of two classes. Nineteen States are provided with protective laws which defend the owners of trees against acts of injury by providing fixed and excessive penalties for all acts against trees, and thus relieving the owner of the excessive burden of proof of value of the damage, etc., which would be necessary if in the absence of such statute law, he was obliged to limit his course of action to a proceeding under the common law, governed by the same principles of just remedy for a wrong common to all Anglo-Saxon people.

In the remaining seventeen States these protective laws are still further reinforced by subsidizing laws which in addition to the special legislation for the defence against wrong-doers, also grant various bounties and immunities to those who plant trees. Most of these laws show an intelligent appreciation of the subject, although in some States there are limiting conditions which restrain the application of such favors, and gives rise to a presumption that the Bill was drawn up by an enthusiast and amended by a practical politician; as, for example, in Rhode Island, where plantations of forest trees numbering 2000 to the acre, are exempted from taxation for fifteen years after the trees have reached a height of four feet, but this applies to land worth less than twenty-five dollars per acre. Now this State has a population of two hundred and eighty to the square mile, distributed in factory villages on fertile land around the water-courses which cannot reach the sea except through the water-wheels of the numerous small mills scattered over the State, and any land in that State valued within the statute limit, must be too sterile to sustain a tree for every twenty-two square feet of area.

California requires certain county officers to encourage the planting of trees along the highways and give one dollar bounty for every living tree four years old. The laws of Michigan, Massachusetts, Nebraska, New Hampshire, New York, and Wisconsin contain wise provision for the encouragement of tree-planting along the highways, on the principle that the result of such action is twofold, for in addition to the benefit accruing to the highway and the abutting property, it has an inevitable tendency to encourage tree-planting elsewhere. The remaining States further this result either by payment of money premiums or abatement of taxation, or both. In some States it is the custom of the governor to issue a proclamation once a year decreeing a public holiday for the purpose of tree-planting along the highways. The presentation of facts showing the alarming diminution of the standing forests, by the Census Bureau and other official sources, and the continual action of associations organized for this purpose, is resulting in measures tending to check the destruction of forests. — *Engineering.*

STATISTICS OF SEWAGE-FARMS.

"Mantel" in Cabin of Sir. A.B. Walker's Yacht: George & Peto Archt. Londn. Engr.

A FEW useful figures are given in the work of Mr. Lewis D'A. Jackson, lately published, respecting the systems of irrigations that have been put into operation in this country. A general tabular statement of the nine sewage-farms competing in 1879 based on the judges' report affords much useful information. We here furnish a few data. The number of acres irrigated at Aldershot is ninety-nine, which takes the supply of sewage from 8,000 persons, or, at the rate of seventy-seven persons to an acre. The average daily supply was, then, 28,000 cubic feet. There is no lift. The land irrigated is of a light sandy character, and the subsoil is ferruginous gravel. One of the chief disadvantages is the want of storm outlets. The whole of the sewage from the Camp passes on to the farm, the effluent is said to be clear, bright and inoffensive. The treatment adopted consists in collecting the sewage in subsidence tanks of small size on the farm, from which the liquid matter alone is allowed to flow direct on to the land. The sludge tanks are formed of earthen banks coated with gravel and tar, and these receive the solid matter at a lower level. Their dimensions are one hundred and eleven feet by twenty-one feet by two-and-one-half feet. The sludge is allowed to consolidate in them, and at certain seasons is carted on to the land — the liquid runs in earth carriers, the land being divided into two-acre plots, subdivided by subsidiary carriers.

Parts of the land are drained to a depth of four feet to six feet; the drains being thirty to sixty feet apart. More drains are considered to be necessary, especially during floods. Crops of all kinds have been successfully grown on the farm. Bedford has an irrigated area of one hundred and fifty-three acres, and the sewage represents 18,690 persons, or one hundred and two persons per acre. The average daily supply of sewage is 152,000 cubic feet; it is lifted twenty-one feet and thirteen feet. The soil is light sand and loam, but the local disadvantage is stated to be that the sewers are liable to flooding from the Ouse. The whole of the sewage of the borough is collected at the pumping-station, the solids are there screened, and a storm overflow provided. At other times the pumps lift the sewage to a height of thirteen feet for one hundred and twenty-three acres, and to twenty-one feet for 30.25 acres. At night the sewage is stored in the sewers; the screened sewage is pumped through an eighteen-inch iron main pipe; the carriers are earthenware pipes eighteen inches to nine inches diameter, laid in banks above surface of the land; the distributors are earth-cut channels ploughed or dug from time to time as required. The solids are also used on the land. The under-drainage is by two-inch pipes, three feet deep in parts, and deep ditches round the fields. The crops grown are various, and the average value per acre of Italian rye grass is £7.66, permanent pasture, £6.37. Of root crops, parsnips show a yield valued at £20, potatoes, £16.84, and onions, £33.28. There is a large yield of celery amounting to £36 an acre. These yields were those of 1878. Wrexham has an irrigated area of 100.7 acres, representing the supply of sewage from 10,000 persons, or ninety-six persons per acre of farm. The daily supply is 48,000 to 80,000 cubic feet, no lift, and the soil is sandy and peaty, with a subsoil of gravel and sand.

As many of our readers know, Col. Jones is the manager; the sewage of Wrexham flows into settling tanks at the top of farm, and the liquid is allowed to flow on to the land in earth-cut carriers. In excess of 80,200 cubic feet of liquid, the wet-weather supply passes into a brook by storm overflows. The solid matter is removed, dried by a fan, and sifted, afterwards made into artificial manure with bone-dust and sulphate of ammonia, and sold or used direct on the land. About three hundred tons of dry sludge is annually removed. The under-drainage of land is by eight-inch, and six-inch pipes, six feet deep, and one hundred and twenty feet apart, though in wet places more pipes are laid three-and-one-half feet deep; little surface effluent passes off the farm. The rotation of crops is rye grass for three years, fourth year cereals, fifth year mangolds.

Among the large farms we note Birmingham with an irrigated area of 252.91 acres from a population of 112,500, or four hundred and forty-four persons per acre of farm; a daily supply of 481,000 cubic feet of sewage, which flows on the land, which is of a light peaty and stiff clayey nature, with gravel subsoil, liable to flooding. One part of the land receives pure sewage, another part unprecipitated sewage mixed with lime, and the remainder the effluent sewage after subsidence. Earth-cut carriers are used. The three settling tanks, three hundred and ninety feet by ninety feet by five-and-and-half feet, at the outfall are used alternately for a fortnight, while the sludge is removed. There are sixteen small settling-tanks, into which mere sludge deposits, the effluent sewage flowing off on the land. The sludge is treated (1) as semi-fluid sludge, which is pumped up and pushed on to the land in elevated wooden troughs by poles, and (2) heavy matter, consisting chiefly of road drift. About five hundred tons of moist sludge are raised daily. The land is prepared by raising small embankments, and then dividing it into a series of small tanks. After the sludge is consolidated in these to a depth of a foot, it is dug into the land to a depth of two feet. The cost of preparing the land and digging is £12 an acre. The judges say the sludge appears not to amalgamate with the soil, and remains a mass of worthless fibrous matter for at least two years, when it is ploughed. The under-drains are six feet deep, and thirty-three feet apart, the effluents are clear, and the chief crops are rye grass, mangolds and cabbages.

Croydon has an irrigated area of three hundred and twenty acres, a population represented of 55,000 or one hundred and twenty-one persons per acre; a supply of 1,233,000 cubic feet daily, flowing on the land, which is of light peat and gravel, with a subsoil of yellow marl and gravel, but liable to excess of subsoil water. The rainfall is separated, and the sewage is conveyed in two outfall sewers; the solid mater is extracted on Mr. Baldwin Latham's plan, and the liquid is distributed in earth-carriers. Our readers are pretty well acquainted with this farm. The farms of Doncaster, Leamington, and Reading are also tabulated. Leamington is a well-managed farm, and is profitable, the only disadvantage being the high lift, one hundred and thirty-two feet. The soil is sand, with gravel subsoil, and the sewage is conveyed to it after the solid matter is partly removed, by earth-cut trenches and carriers.—*Building News.*

CHARCOAL TIN.

New York, N. Y.

To the Editors of the American Architect: —

Dear Sirs, — Will you please inform me of the difference between quality of tin in common use on buildings. We have been accustomed to call for I. C. *charcoal* tin to distinguish it from *coke* tin.

Is it necessary to add the word "charcoal," or is it sufficient to call for I. C. tin simply, to get the best made by the charcoal process?

Yours truly, I. C. Charcoal Tin.

[I. C. charcoal tin means simply a light quality of charcoal plate, Charcoal plate is more flexible than coke plate, and makes better joints in roofing.—Eds. American Architect.]

BOOK ON FIRE-PROOF CONSTRUCTION.

Minneapolis, Minn.

To the Editors of the American Architect: —

Dear Sirs, — Will you be kind enough to inform me of the name of the best work on "Fire-proof Construction," both of iron and terra-cotta; also prepared materials, such as preparations applied to wood, etc. I want the "work" (if there be such a one) to give the strength of the materials, as the weight a certain-sized iron column will sustain, also iron beams; and the latest and best methods of coupling, etc.; in other words, a "comprehensive digest of fire-proof construction." I want to order such a book, and thought you would post me of the name and price, etc. An early reply will oblige,

Yours very truly, W. D. Kimball, Architect.

[Kidder's "*Architect's and Builder's Pocket-book*," published by John Wiley & Sons, Astor Pl., New York, price $5.00, gives most of the information desired.—Eds. American Architect.]

NOTES AND CLIPPINGS.

Restoration of a St. Eleanor's Cross. — Queen Eleanor's cross at Waltham is to be restored. It was designed by Pietro Cavallini in 1291 and finished in 1294. It is in memory of the consort of Edward I., who accompanied her husband to Palestine and sucked the poison from a dagger wound in his arm. She was the mother of the first English Prince of Wales.

The Old State House at New Haven, Conn. — A New Haven committee appointed to look after the old State House have decided against appropriating $25,000 to repair it, and recommend that it be demolished. This brings a protest from Prof. W. P. Trowbridge, of Columbia College, who considers the building undoubtedly the most noted exemplification of Greek architecture on a grand scale in this country.

Painting Icons. — The painting of religious icons is an industry of the kustar in many governments. In the district of Bogorodsk — Moscow government — such occupation is conducted in thirty-seven homes and seventy-one kustars are constantly engaged. The yearly output of icons from this region is about 9,000 — which are mostly ordered — valued at from 13,050 to 17,400 rubles ($9,525 to $8,700). In the execution of such work the icons are divided into two groups — single saints and multiple saints. A kuster can execute three icons containing single figures in a week, the sale price for which is one ruble (fifty cents) each; total, three rubles ($1.50); the expenses in connection with the same being two rubles, eight copecks ($1.04), leave a remuneration of ninety-two copecks (46 cents). However, should the icon painter be in a position to purchase at once the material necessary for painting sixty icons at an outlay of thirty-seven rubles, ninety-three copecks ($18.96½); if he paints icons in which there are more than one figure the average cost of production does not exceed sixty-three copecks (31½ cents). The sale price being two rubles ($1.00) for such works, his receipts from such occupation will be one ruble, fifty-one copecks (75½ cents) for his week's labor.—*St. Petersburg Consular Report.*

The "Vulgarization" of Oxford.—William Morris writes to the London *Daily News* as follows: "I have just read your too true article on the vulgarization of Oxford, and I wish to ask if it is too late to appeal to the mercy of the 'dons' to spare the few specimens of ancient town architecture which they have not yet had time to destroy, such, for example, as the little plaster houses in front of Trinity College or the beautiful houses left on the north side of Holywell Street. These are in their way as important as the more majestic buildings to which all the world makes pilgrimage. Oxford, thirty years ago, when I first knew it, was full of these treasures; but Oxford 'culture,' cynically contemptuous of the knowledge which it does not know, and steeped to the lips in the commercialism of the day, has made a clean sweep of most of them; but those that are left are of infinite value, and still give some character above that of Victoria Street or Bayswater to modern Oxford. Is it impossible, sir, to make the authorities at Oxford, town and gown, see this, and stop the destruction? The present theory of the use to which Oxford should be put, appears to be that it should be used as a huge upper public school for fitting lads of the upper and middle class for their laborious future of living on other people's labor. For my part I do not think this a lofty conception of the function of a university; but if it be the only admissible one nowadays, it is at least clear that it does not need the history and art of our forefathers which Oxford still holds to develop it. London, Manchester, Birmingham, or perhaps a rising city of Australia, would be a fitter place for the experiment, which it seems to me is too rough a one for Oxford. In sober truth, what specialty has Oxford if it is not the genius loci which our modern commercial dons are doing their best to destroy?"

A New Cure for an Old Complaint.—Mr. Robert Garrett is building a portico over his new house in Mount Vernon Place, Baltimore. Mr. Henry Janes, who occupies the adjoining house, objected to the portico on the ground that it shut off his light. Accordingly he applied for a mandamus requiring Mr. Garrett to tear it down. This mandamus was granted, whereupon Mr. Garrett took the case to the court of appeals, where it is now pending. On Wednesday it was rumored that Mr. Janes had discovered a way to wreak summary vengeance upon Mr. Garrett in case the court of appeals decided that the portico could stay where it is. He had decided, if the portico was not torn down, to present his house and grounds to a colored orphan asylum. This threat to establish such an institution in Mount Vernon Place aroused the property-holders to a high pitch of indignation.—*Commercial Advertiser.*

To Clarify London Sewage. — The disposal of metropolitan sewage has long been one of the problems which have exercised the best engineering and sanitary talent of the day. In June of 1882 Sir William Harcourt deemed it necessary to recommend the appointment of a royal commission to inquire into and report upon the subject, but beyond the closing of the inquiry, and the completion of the report, no apparent steps have been taken toward the providing of a remedy for the most undesirable condition of things with which the dwellers in London are continually brought face to face. Lieutenant-Colonel A. S. Jones and Mr. Bailey-Denton have now memorialized Sir Richard Cross, reminding the right honorable gentleman at the outset that no substantial effort has been made to give practical effect to the recommendations of the commission, although their report was submitted six months ago. The design of the memorialists embraces the extension of the outfall sewer to Canvey Island. Sir Joseph Bazalgette, it will be remembered, proposed that the outfall should be at Thames Haven, which is separated from Canvey Island by Hole Haven Creek. It is premised that a good and practicable scheme for the clarification of the sewage at the point of outfall might be devised. By extending the sewer to Canvey Island, instead of discharging the sewage directly into the river, it is assumed that the process of treatment would be greatly facilitated. The memorialists propose that the sewer should deliver at a height equal to that of the banks or walls by which Canvey Island is surrounded (about ten feet above ordinary high tides). The purpose for which these banks exist is to prevent the flooding of the island by outside tidal water. To effect the clarification of the sewage upon the island inside the banks, it is proposed to have recourse to mechanical deposition and chemical precipitation whereby the solid portions may be separated from the liquid, and subsequently to apply the liquid to land by way of filtration or irrigation, separately or in combination, whereby the effluent will be brought to such a condition as will render it perfectly admissible into any tidal waters. It is intended to convert the extracted solid or fertilizing portions of the sewage into a salable manure, as far as it will be profitable to do so, or by mixture with soil to bury the sludge. Failing profitable or advantageous use, an alternative process would be the burning of the perishable or organic matter. It is pointed out that Canvey Island contains about four thousand acres — surely a sufficient area for the practical accomplishment of the scheme, if space is a desideratum. There are ways and means, however, of adding twelve hundred acres to the island at a comparatively small outlay. The proximity of the island to South Benfleet, where there exists a station on the London, Tilbury and South-End Railway, will facilitate the construction of a tramway to and across the island for the transmission of produce, and materials by land, while the frontage of the island to the river will afford access by water. The surface of the island within its banks is one general level, with only such hollows and gutters in its configuration as have been naturally formed by the off-flow of surface-water. The height of the land is from eight feet to nine feet above ordnance datum, while the surrounding banks have been raised about nine feet higher, so that there physically exists within the island, between the surface of the land and the top of the inclosing banks, a ready-made basin capable of holding, without overflow, about 10,000,000,000 gallons of liquids. It is not anticipated, however, that this capability will ever be utilized. The present quantity of dry-weather sewage daily discharged from the metropolis has been taken by the Royal Commissioners to be 150,000,000 gallons, while the future dry-weather discharge has been estimated by certain authorities as likely to reach 200,000,000 gallons. There exists, therefore, within the island, space sufficient to hold for two months the present dry-weather sewage of London, without overflow and without calling into requisition the absorbent powers of the soil upon which the liquid sewage would rest, and which, with well devised underdrainage, would be very effective for infiltration. An area of from seventy to eighty acres within the banks is capable of receiving a day's discharge of sewage without overflow. These are the leading features of the scheme. It may be added that the memorialists assume a sufficiency of space on the island to receive and clarify the sewage of the metropolis for a century to come, after making all allowances for the gradual reduction of area. Whatever the intrinsic or relative merits of the plan, the urgency of providing a solution for this mighty problem should at all events insure it a respectful reception and a careful assessment of its claims. Something yet remains to be said on the financial aspect of the question. Lieutenant-Colonel Jones and Mr. Bailey-Denton have already secured more than three-fourths of the island. To facilitate the raising of the capital for its purchase without resort to speculative means, they propose that the various properties in the island shall, as they are purchased, be conveyed at once to the Metropolitan Board, and that bonds of subsidy for a fixed proportionate amount shall then be handed over to trustees. The latter are, it is suggested, to be jointly selected by the Metropolitan Board of Works and the memorialists, with the understanding that such bonds shall be converted into money to be laid out in the purchase of the land and in the payment for permanent works, including the necessary legal and engineering charges. The whole of the bonds so advanced shall not, it is stipulated, exceed three-fourths of the subsidy — *i. e.*, £66,000 a year, leaving two-fifths of the subsidy, or £44,000 a year, to meet the current working expenses after the completion of the permanent works. — *Liverpool Daily Post.*

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

TRADE SURVEYS.

If it were possible to specify in a line or two the character of next year's building operations, it might be said that they will cover three kinds of work — house building, public building and street improvements. It is too soon to anticipate fully the volume or character of next year's business. Extensive street improvements have already been determined upon in New York, Philadelphia, and Chicago, and in a large number of towns, of from ten to one hundred thousand inhabitants, house-building has made street improvements a necessity. Municipal authorities are forced by public opinion to deal more liberally in the matter of well-paved streets. The dealers in street-building material have been already consulted in numerous cases, as to supplies, prices, deliveries, etc., and they give, therefore, a rather encouraging statement as to what they expect to do during the coming year. The construction of a thousand or two miles of streets will give quite a stimulus to the material market, and reflect no small degree of activity in a variety of side industries that will be called upon to furnish material of one kind or another for that purpose. The municipal authorities are already preparing to expend money liberally in the erection of public buildings. In connection with this activity, electric-lighting companies are deeply interested, and have already been called upon for estimates in many cases for plants and appliances for the production and use of electric lighting. These companies are not, as yet, competing very actively with each other, and are, therefore, expecting to realize liberal margins. Several systems are before the public, all of which are pretty well understood. There is room for improvement in each of the various systems, but sufficient progress has been made to justify the public and its care-takers in municipal bodies in placing contracts for use of the improved systems of lighting. The manufacturers of hardware, nails, lumber, brick, and building material generally, including iron and steel, are satisfied with the present outlook, though they regret that the upward tendency in prices will likely be arrested before the desired improvement in prices has taken place. The enumeration of the new buildings already projected is sufficient to satisfy architects and builders and manufacturers of material that the coming year will bring with it better prices, unless some unforseen cause should arise to obstruct the improvement asserting itself in a quiet way. The iron and steel making establishments of the country are sold up most of them into midwinter, and with the prosecution of projected railway enterprises, an incentive to greater production in outside industries will be greatly stimulated. The disposition is manifested everywhere to increase production in a moderate way. Raw material is advancing, in tendency, at least, if not in price. It remains with the manufacturers in all the various industries to protect their interests by conservative management. Prices can improve ten per cent. and will, if manufacturers do not forget themselves and disregard the experience of the past two or three years. Building enterprises of great magnitude will be undertaken, if nothing more unfavorable takes place than has already manifested itself. The construction of Eads's ship-railway is among the possibilities of the next few years. The construction of four or five thousand miles of long lines of railroad will, no doubt, be undertaken within ninety days after the corner in railway affairs has been turned. The manufacturers of all kinds of wares, machinery, and shop products generally, have been more encouraged during the past year with reference to the possibilities of an export trade than they have been during our entire previous history. Our export trade has very intimate connection with our building interests. It is impossible to predict what there is in trade with foreign countries, but whatever advantage is to be secured will be worked out with vigor by American enterprise, even without the advantages which nations competing with us possess. Our manufacturers have taken too much for granted, with reference to the advantages which other nations possess over us in seeking for the trade of the world. The list of machines and machinery, which is now preferred by foreign users of machinery, would be a surprising one if made. It covers one hundred articles, from locomotives down to show-cases, printing material, lithographic work, paper, hosiery, and a long list of articles, the export of which is not so much as suspected by the general public.

American enterprise is overcoming obstacles which cheap foreign labor is presenting, and is now forcing the products of American shops into use, against the whole established reputation of Old Country houses. Special reference is made to this fact, because of its indirect connection with its advantages to the building interest of the United States. We export one-fourth of our cereal products, but if the predictions of some of our economists are true, Egypt and Asia will supply the requirements of Europe and Great Britian on more favorable terms. But in the domain of mechanics and in the domain of manufacturing we possess advantages which cannot be offset or overcome by cheap land and cheap labor in the remote sections of the world. It is herein that American enterprise has a vast field to fill, and it has entered upon that field with a vigor which indicates that it will fill its portion of it in a few years, with its usual enterprise and success. What has been done with American locomotives can be done with American wood-working machinery, hardware, tools and appliances of a hundred kinds. The agents of manufacturers who have been abroad during the past twelve months give rather flattering reports of the possibilities that are in store for our manufacturers when they learn what is wanted, and adapt themselves to meeting the requirements of people who are less progressive than ourselves.

Lumber manufacturers, according to very recent reports, will endeavor to meet the demand for lumber with a barely sufficient supply, rather than with an excess. Quiet predictions in trade circles have been made that lumber will advance between now and May, but the bare possibility of such an unfavorable result will bring about a cure in advance. A combination may be possible among the hemlock interests of Pennsylvania, or among the white-pine interests of Chicago, but the courses of supply are all abundant, and the necessities of manufacturers too restricted to admit of such restriction of supply as will have a marked effect upon prices. Hard woods are in active demand in nearly all markets. Buyers are not purchasing for the future, because of the information in their possession that the supply for the coming year will be unusually large. Yellow pine has slightly advanced on account of the higher freight rates. Walnut, cherry and mahogany are only moderately abundant. White pine is quiet at the usual low market rate, and all other kinds are moving along near the minimum quotations. In iron the situation is a little more encouraging. Production has been increased about eight thousand tons per week, as against the summer output. Finished iron, such as bars, sheets and plates, are selling at summer prices. Pipe-iron is scarce, because of the exceptionally active demand. Steel rails are firm and steady at $34 to $35. The production will be increased to one million tons. The textile manufacturers, the boot and shoe makers, the tool makers, and the manufacturers of boilers and engines, all intend to accept whatever risks are involved in a full production this winter.

BUILDING PATENTS

[Printed specifications of any patents here mentioned together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

331,269. SAFETY-CATCH FOR ELEVATORS.—Henry Albert, Crescent City, Cal.

331,271. BATH-TUB AND WASH-TUB COMBINED. — William P. Austin, New York, N. Y.

331,273. HYDRAULIC ELEVATOR.—Norman C. Bassett, Chicago, Ill.

331,289. TRANSOM-LIFTER. — Arthur English, Chicago, Ill.

331,312. COMPOSITION FOR FIRE-PROOFING AND OTHER PRESERVATIVE PURPOSES. — Abel Jean Martin, Paris, France.

311,341. RATCHET-DRILL. — Axel A. Storm, Chicago, Ill.

331,345. LINEAR OR OTHER SCALE. — Charles A. L. Totten, Garden City, N. Y.

331,370. SASH-FASTENER. — Martin Bourke, Youngstown, Ohio.

331,383. MIXED PAINT. — Herbert C. Dorr, San Francisco, Cal.

331,391. BRICK OR TILE DIE. — Jesse L. Friend, Perrysburg, Ind.

331,394. AUTOMATIC SPRINKLER FOR FIRE-EXTINGUISHERS.—Almon M. Granger, Medford, Mass.

331,895. GLASS TILE AND PROCESS OF MAKING THE SAME.—Jonathan Haley, Ravenna, O.

331,405. SAFETY-DEVICE FOR ELEVATORS. — William W. Jackson, Chicago, Ill.

331,406. SYSTEM OF TEMPERATURE REGULATION. —Warren S. Johnson, Whitewater, Wis.

331,409. BOILER-COVERING. — Matthew Keenan, Armagh Works, Tredegar Road, North Bow, County of Middlesex, Eng.

331,420. BRICK-MACHINE. — Peter B. Mathiason, St. Louis, Mo.

331,428-429. FIRE-ESCAPE. —Patrick H. Montague, St. Louis, Mo.

331,431. STEAM-GENERATOR. — William H. Page, Preston, Conn.

331,433. ATTACHMENT FOR LEVELLING-INSTRUMENTS AND TRANSITS. — Frank Parson, Raton, New Mexico.

331,455. HEATING-STOVE.—William C. Smith, Warsaw, Mo,

231,466. HANGING-WINDOW. — John R. Whitney, Radnor, Pa.

331,469. MATERIAL FOR THE DECORATION OF THE INTERIOR WALLS AND CEILINGS OF BUILDINGS. — Jacob M. Baker, Boston, Mass.

331,489. FIRE-ESCAPE. — Jennie R. Fuller, Toledo, Ohio.

331,500. TILE SECTION BETWEEN WALLS, JOISTS, ETC.—William F. Higgins, San Francisco, Cal.

331,519. SIDING-REST. — John McDonald, Central City, Neb.

331,520. COMBINATION-WRENCH.—Winfield S. McKenzie, Kemp, Tex.

331,551. OPERA-CHAIR. — John M. Sauder, Harrisburgh, Pa.

331,556-558. VALVE FOR WATER-CLOSETS. — William Scott, Malden, Mass.

331,579-584. MACHINE FOR MAKING TUBES FROM HOLLOW INGOTS. — Stephen P. M. Tasker, Philadelphia, Pa.

331,592. SASH-BALANCE. — Jacob Weber, New York, N. Y.

331,595. MEANS FOR DETECTING AND CARRYING OFF LEAKAGE FROM GAS-MAINS. — Geo. Westinghouse, Jr., Pittsburgh, Pa.

SUMMARY OF THE WEEK.

Baltimore.

DWELLINGS. — W. F. Weber, architect, has prepared plans for W. T. & G. E. Slothower, for 2 three-st'y brick and stone buildings, to be erected cor. Mulberry and Greene Sts., on lot 25′ x 60′; cost, $4,800; Lewis C. McCusker, builder.

BUILDING PERMITS.—Since our last report ten permits have been granted, the more important of which are the following: —

Jos. Scherer, three-st'y brick building, 23′ x 130′, w s Broadway, between Pratt and Gough Sts.

W. L. Stork, 15 three-st'y brick buildings, e s Calvert St., between Biddle and Preston Sts.

P. M. Evans & Co., 2 two-st'y brick buildings, w s Mount St., n of Franklin St.

Peter Bremer, 18 two-st'y brick buildings, s s Ramsay St., between Monroe and Payson Sts.

Carlos Maris, 2 two-st'y brick buildings, e s Madeira Alley, n of Bank St., and two-st'y brick building in rear.

Boston.

BUILDING PERMITS. — *Wood.* — *Downer St., No.* 30, storage, 16′ x 20′; Margaret Roach, owner; J. C. Noonan, builder.

Champney Pl., cor. Champney St., dwell., 20′ x 30′; Ulrich Wilhern, owner and builder.

Sparhawk St., near Sparhawk Ave., stable, 30′ x 40′; T. J. Young, owner; S. A. Davenport, builder.

Dennis St., No. 6, dwell., 20′ x 45′; F. R. Perkins, owner; C. A. Jefferson, builder.

Clifton St., No. 71, dwell., 21′ x 32′; G. A. Gifford, owner and builder.

Brooks St., e Pine St., dwell., 19′ 6″ x 21′; J. E. Blakemore, owner; W. A. Mitchell, builder.

Sycamore St., s w cor Pine St., dwell., 19′ 6″ x 21′; J. F. Blakemore, owner; W. A. Mitchell, builder.

Adams St., No. 228, green-house, 26′ 6″ x 82′ 6″; Jasem Gordon, owner; W. H. Gordon, builder.

Paris St., No. 242, stable, 15′ x 18′; J. E. Lawton, owner and builder.

Washington Pl., w Tremont St., dwell., 23′ x 43′; F. W. Gordon, owner and builder.

East Sixth St., Nos. 443, 445, 447, dwell., 15′ 9″ x 29′; James V. Devine, owner and builder.

Lark St., No. 32, shed, 24′ x 58′; J. R. Symes, owner. Wm. Glynn, builder.

Waverly Pl., w Waverly St., dwell., 20′ x 30′; J. F. Mead, owner and builder.

Brooklyn.

BUILDING PERMITS. — *Jefferson St.*, s s, 430′ w Marcy Ave., 7 three-st'y brown-stone dwells., tin roofs; cost, each, $7,000; owner and builder, Harman Phillips, 289 Jefferson St.; architect, I. D. Reynolds.

Fulton St., n s, 160′ e Bedford Ave., 3 four-st'y brown-stone stores and tenements, tin roofs; cost, each, $8,000; owner, A. C. Brownell, 261 Putnam Ave.; architect, A. Hill.

Middleton St., n s, 235′ e Marcy Ave., five-st'y brick factory, tin roofs; cost, $18,000; owners, Wm. Lang & Co., South Sixth St., cor. First St.; architect, H. Vollweiler; builder, J. Rueger.

McDougal St., n s, 75′ w Hopkinson Ave., 4 two-st'y frame (brick-filled) dwells., tin roofs; cost, each, $2,500; owner, architect and builder, Baldwin Pettit, 79 Hull St.

Clifton Pl., No. 76, s s, 275′ e Grand Ave., four-st'y brick double flat, gravel roof; cost, $10,000; owner, architect and builder, J. N. Smith, 257 Greene Ave.

George St., n s, 175′ e Knickerbocker Ave., 2 three-st'y frame (brick-filled) store and tenements, tin roofs; cost, each, $4,000; owner, architect and builder, Joseph Harte, 169 Boerum St.

Woodbine St., n s, 107′ e Broadway, 5 two-st'y frame dwells., tin roofs; owner, Thos. J. Allen, 931 Gates Ave.; builder, T. B. Thomas.

Greene Ave., s s, 400′ e Bedford Ave., 6 three-st'y brown-stone dwells., tin roofs; cost, each, about $6,000; owner, T. H. Brush, 587 Bedford Ave.; architect, F. E. Lockwood.

Woodbine St., s s, 310′ e Broadway, 2 two-st'y frame (brick-filled) dwells., tin roofs; cost, each, $2,879; owner, Fred. Cazner, 745 Munroe St.; architects, Parfitt Bros.; builder, not selected.

Dodworth St., n s, 120′ 10″ e Broadway, three-st'y frame tenement, tin roof; cost, $4,000; owner and builder, Chas. Loeffler; architect, H. Vollweiler.

Wyckoff St., s s, 100′ w Nevins St., four-st'y brick tenement, tin roof; cost, $9,000; owner and builder, John M. O'Neil; architect, R. Dixon.

Twenty-fourth St., n s, between Fifth and Sixth Aves., one-st'y brick engine and boiler-house, tin roof; cost, $2,000; owner, Atlantic Ave. R. R. Co.; architect, Mr. Cogswill; builders, J. J. Cody and O'Donnell & Feenan.

Hull St., s s, 225′ w Stone Ave., 4 three-st'y brick tenements, gravel roofs; cost, each, $4,500; owner, W. H. H. Robbins; architect, B. T. Robbins; builders, C. V. Robbins and J. Remsen.

Broadway, e s, 174′ s De Kalb Ave., four-st'y brick store and tenement, tin roof; cost, $5,500; owner, C.

H. Reynolds, 810 Bushwick Ave.; architect, J. D. Hall; builder, S. W. Post.

Calyer St., No. 80, s s, 175′ w Franklin St., three-st'y frame (brick-filled) tenement, tin roof; cost, $1,200; owner, Geo. H. Christoffer, 439 First St.; architect, F. Weber.

Evergreen Ave., w s, 25′ n Ralph St., 2 three-st'y frame (brick-filled) tenements, gravel roofs; cost, $9,600; owner, John Menehan, Ralph St., near Evergreen Ave.; architect, F. Weber; builder not selected.

Patchen Ave., s e cor. Bainbridge St., 3 three-st'y frame (brick-filled) tenements, tin roofs; cost, each, $4,500; owner, architect and builder, H. Grassman, 364 Vernon Ave.

Prospect Pl., n s, 100′ e New York Ave., two-st'y brick and slate stable, tin and slate roof; cost, $2,500; owner, A. M. Davis, 798 St. Marks Ave.; architect, A. Hill; builder, D. H. Fowler.

St. James Pl., n w cor. Lafayette Ave., Ohio stone church, slate roof; cost, $85,000; owner, Emanuel Baptist Church; architect, J. H. Kimball; masons, Mahoney & Watson; contractor, not selected.

Third Ave., s e cor. Forty-second St., three-st'y frame store and tenement, tin roof; cost, $6,100; owner, Patrick McInerny; architect, G. Damen; builders, Spence Bros.

Lynch St., s s, 180′ w Marcy Ave., 14 three-st'y frame tenements, tin roofs, (brick-filled); cost, each, $4,500; owner, Mary Mulvihill, 115 Lynch St.; architect, J. Platte; builder, N. Mulvihill.

Middleton St., n s, 80′ w Marcy Ave., 18 three-st'y frame (brick-filled) store and tenements, tin roofs; cost, each, $4,500; owner and builder, Jacob Bossert, Hayward St., near Harrison Ave.; architect, J. Platte.

Withers St., No. 147, n s, 150′ e Ewen St., three-st'y frame (brick-filled) tenement, tin roof; cost, $4,300, owner and architect, Patrick Clark, 149 Withers St.; builders, J. Rueger and B. Guenshe.

Seventh Ave., s e cor. Sixteenth St., 6 three-st'y brick stores and dwells., tin roofs; cost, total, $31,000; owner, Ralphina Kirkman, 415½ Eighteenth St.; architect and builder, Ralph Kirkman.

Alterations. — *Suydam St.*, n s, 137′ w Bushwick Ave., two-st'y extension, felt and shingle roof; cost, $4,000; owner, Mrs. J. D. Froelich, Bushwick Ave., n w cor. Suydam St.; architect, F. J. Berlenbach, Jr.; builder, not selected.

Twenty-fourth St., between Fifth and Sixth Aves., insert girders and columns, interior alterations, etc; cost, $3,000; owner, Atlantic Ave. R. R. Co.; architect, M. C. Coggswell; mason, not selected; contractor, M. C. Coggswell.

Heyward St., s s, 60′ e Wythe Ave., three-st'y brick extension, gravel roof; cost, $4,200; owner, Kiernan Egan, 5852 Clermont Ave.; architect, I. D. Reynolds.

Chicago.

Building Permits. — Mrs. M. B. Neff, three-st'y flats, 1058 and 1060 Washington Boulevard; cost, $48,000; architect, Van Osdel.

H. H. Brown, three-st'y store and dwell., Polk St. and Ogden Ave.; cost, $15,000.

A. M. Fuller, three-st'y store and flats, 520-522 Van Buren St.; cost, $12,000; architect, J. B. Shipman.

C. E. Brown, three-st'y store and flats, 1091 and 1093 West Harrison St.: cost, $12,000; architects, Thomas & Rodgers.

J. Wolford, two-st'y dwell., 552 North State St.; cost, $4,500.

A. Doughty, two-st'y stable, 404 Webster Ave.; cost, $6,000.

P. S. Kirkwood, 5 three-st'y stores and flats, 315-323 Madison St.; cost, $20,000; architect, H. G. Miner.

F. Larned, 2 three-st'y dwells., 2712-2714 Michigan Ave.; cost, $20,000.

H. Lindemann, two-st'y flats, 251 West Division St.; cost, $2,500.

Mrs. M. Schultz, three-st'y flats, 184 South Peoria St.; cost, $4,000.

W. Cass, 5 three-st'y stores and flats, 167-173 Harrison St.; cost, $16,000; architect, W. A. Furber.

City of Chicago, two st'y police-station, 187 Canalport Ave.; cost, $10,000.

W. P. Hock, 2 three-st'y stores and dwells., 78 and 80 North Halsted St.; cost, $15,000; architect, J. Otto.

L. L. Coburn, 2 three-st'y stores and flats, 275-277 Van Buren St.; cost, $8,000; architect, H. L. Halberg.

W. S. Walker, 4 two-st'y dwells., 3612-3622 Ellis Ave.; cost, $20,000; architects, Patten & Fisher.

D. B. Shipman, two-st'y addition, rear 1510 State St.; cost, $6,000.

F. B. Clark, 3 two-st'y flats, 948-952 Taylor St.; cost, $10,000.

J. L. Campbell, three-st'y flats, 906 West Polk St.; cost, $7,000; architect, H. B. Seeley.

J. L. Campbell, 2 two-st'y dwells., 730-741 Warren Ave.; cost, $10,000; C. A. Weany, architect.

R. Tobin, three-st'y store and dwell., 181 Blue Island Ave.; cost, $6,000; architect, W. H. Drake.

J. Zarnbsky, three-st'y store and dwell., 705 Throop St.; cost, $8,000; J. Wetner, architect.

A. Breicher, 2 three-st'y stores and dwells., 596 and 598 Blue Island Ave; cost, $15,000; architect, A. Loula.

J. M. Thacher, 7 two-st'y dwells., 3700-3712 Ellis Ave.; cost, $25,000; architect, L. G. Halberg.

E. Lehman, four-st'y store and dwell., 558 West Harrison St.; cost, $6,000.

E. Lehman, three-st'y store and dwell., 205 and and 207 Loomis St.; cost, $4,000.

Chicago & Eastern Illinois Railroad Co., freight-house, Dearborn St.; cost, $10,000.

J. M. Dooley, two-st'y flats, 349 West Huron St.; cost, $3,000; architect and builder, J. M. Dooley.

J. J. Curran, three-st'y store and flats, 350-354 Blue Island Ave.; cost, $25,000; architects, Edbrooke & Burnham.

Mrs. H. G. Stockton, three-st'y dwell., 333 Rush St.; cost, $7,000; architects, Treat & Foltz.

P. Sholze, three-st'y store and dwell., 418 Ogden Ave.; cost, $6,000; architect, Hildenger.

O. D. Wetherell, two-st'y barn, Calumet Ave.; cost, $3,000; architects, Burnham & Root.

Mrs. J. Lindgren, 3 three-st'y stores and flats, 173-177 East Chicago Ave.; cost, $25,000; architect, H. Harrison.

T. Oston, 2 two-st'y dwells., 3157 and 3159 South Park Ave.; cost, $10,000; architect, W. A. Furber.

G. F. Harding, 11 two-st'y dwells., 3301-3321 Vernon Ave.; cost, $45,000; architects, Wheelock & Clay.

Little Rock, Ark.

Building Permits. —Two-st'y brick store, Main St.; owner, Isaac Kempner; architect, J. B. Bartlett; cost, $7,000.

Remodeling Hyde's Opera-House, Markham St.; owner, Dr. C. Watkins; architect, J. B. Bartlett; cost, $12,000.

Two-st'y brick store, Markham St.; owners, Hornibrook & Townsend; architect, J. W. Lavender; cost, $6,000.

Iron-clad cotton warehouse, Scott St.; owners, Hall & Matthews; cost, $3,000.

Brick cotton warehouse, Scott St.; owners, J. B. Miller & Co.; architects, Pettefer Bros.; cost, $3,000.

Remodelling office and reading rooms Capitol Hotel, Markham St.; owner, Dr. C. Watkins; architect, J. Harding; cost, $4,000.

County jail, Water St.; owners, Pulaski County; architect, J. B. Bartlett; cost, $16,990.

Milwaukee, Wis.

Building Permits.—C. Duchow is building an $8,500 brick house on Milwaukee St., for J. H. Frank.

M. Thielan is putting up a $2,200 frame house, on Farwell Ave., for Peter Ehr.

J. Markey is building a row of brick tenements on Eighth St., at a cost of $4,000.

C. Gilhaar is building a $5,000 frame house on Nineteenth St., for Jos. Leedom.

C. Gilhaar is also building a frame house on Eighteenth St., for I. P. Ticknor, at a cost of $5,000.

Also a double frame dwell., on the cor. of Thirty-fourth and Wells Sts., for E. A. Austin, at a cost of $3,000.

Paul Vogt & Co. are erecting a sash and door factory on Island Ave., at a cost of $6,000.

Minneapolis, Minn.

Building Permits.—J. W. Day & Co., two-st'y wood saw mill, n e cor. Stevens St. and Twenty-fourth Ave., n; cost, $15,000.

J. W. Day & Co., one-st'y brick engine-house, n e cor. Stevens St. and Twenty-fourth Ave., n; cost, $3,000.

Mary A. McLaughlin, 2 two-st'y wood dwells., e s Stevens Ave., bet. East Thirty-first and East Thirty-Second Sts, s; cost, $7,000.

Chas. T. Harris, two-st'y brick veneer dwell., w s Grand St., bet. East Twenty-second and East Twenty-third Sts., s; cost, $3,000.

New York.

Cottages.—A number of cottages are to be built near St. Mary's Park, for Mr. C. P. Huntington, from plans of Mr. Jas. Stroud, and a number are also expected to be built at South Yonkers, on property of Jas. Gordon Bennett and others, from plans of Messrs. Berg & Clark.

Store.—On the n e cor. of Third Ave. and Eighteenth St., a store-building, of brick, stone and terra-cotta, 74′ x 80′, is to be erected for Messrs. Elmer & Amend, from plans of Messrs. De Lemos & Cordes.

Tenements. — On the n e cor. of Second Ave. and One Hundred and Second St., 8 five-st'y brick and stone tenements and stores, 25′ x 75′ each, are to be built at a cost of $136,000, for E. C. M. Rand, from plans of Mr. Wm. Baker.

Building Permits. — *Sixty-second St.*, s s, 200′ w Tenth Ave., 8 five-st'y brick tenements, flat tin roofs; cost, $120,000; owner, Fred T. Camp, 60 Liberty St.

Eighth Ave., n w cor. One Hundred and Sixteenth St., five-st'y brick store and dwell., flat tin roof; cost, $18,000; owner, Hiram Moore, 56 East One Hundred and Tenth St.; arch tect, J. H. Valentine, 108 East One Hundred and Twenty-fifth St.

West Forty-third St., Nos. 323 and 325, 2 five-st'y brick tenements, brick and brown-stone fronts, flat tin roofs, cost, $40,000; owner, Wm. Rankin, 563 West Fifty-first St.; architect, George Keister, 347 West Forty-third St.

Second Ave., e s, Eighty-eighth to Eighty-ninth St., 8 five-st'y brick tenements, flat tin roofs; cost, $120,000; owner, Frederick Schuck, n w cor. Ave. A and Eighty-fifth St.; architect, John Brandt, 1491 Third Ave.

One Hundred and Sixth St., s s, 100′ w Third Ave., five-st'y brick tenements, flat tin roof; cost, $21,000; owner, Whitfield Terreberry, 243 Broadway; architect, John C. Burne, Third Ave. and Eighty-sixth St.

East Eighty-seventh St., No. 174, two-st'y brick workshop, flat tin roof; cost, $3,500; owner, Francis E. Becker, 118 East Eighty-seventh St.; architect, Wm. Stauffer, 341 East Eighty-seventh St.

One Hundred and Twenty-first St., s s, 115′ e Fourth Ave., 2 five-st'y brick tenements, flat tin roofs; cost, $40,000; owner, Christiana R. Kehoe, 57 East One Hundred and Twenty-first St.; architect, Alfred Kehoe, 57 East One Hundred and Twenty-first St.

One Hundred and Sixty-ninth St., n s, 175′ e Eleventh Ave., three-st'y wooden dwell., peak tin roof, cost, $3,000; owner, John Devlin, One Hundred and Sixty-fifth St., e of Tenth Ave.; builder, Jeremiah Sullivan, One Hundred and Fifty-ninth St. and Tenth Ave.

Eighth Ave., w s, 20′ 11″ n One Hundred and Sixteenth St., 4 five-st'y brick tenements, flat tin roofs; cost, $64,000; owner, Hiram Moore, 56 East One Hundred and Tenth St.; architect, J. H. Valentine, 108 East One Hundred and Twenty-fifth St.

Seventh Ave., w s, 50′ s from Seventh Ave., three-st'y brick dwell., flat tin roof; cost, $13,000; owner, P. J. O'Brien, One Hundred and Forty-third St., between Seventh and Eighth Ave.; architect, W. P. Anderson, 102 South Fifth Ave.

First Ave., w s, n e cor. Ninety-seventh St., 4 five-st'y brick tenements, flat tin roofs; cost, $52,000; owner, F. A. Clark, 236 East Ninety-seventh St.; architect, John Brandt, 1491 Third Ave.

Ninety-seventh St., s s, 80′ w First Ave., 2 five-st'y brick tenements, flat tin roofs; cost, $34,000; owner, F. A. Clark, 236 East Ninety-seventh St.; architect, John Brandt, 1491 Third Ave.

Clifton St., s s, 25′ w Ave. C, two-st'y frame dwell., flat tin roof; cost, $3,800; owner, John Rieglemann, Clifton St. and Ave. C; architect, Adolph Pfeiffer, 891 North Third Ave.

Four-st'y brick engine and cooler room, flat tin roof; cost, $18,000; owners, Beaclestone & Woerz, West Tenth St., near Washington St.; architects, A. Pfund & Son, 232 West Thirty-sixth St.

West Fifty-seventh St., No. 420, two-and-a-half-st'y brick mission-house, peak and flat slate and tin roof; cost, $14,000; owner, Samuel Inslee, 169 West Forty-seventh St.; architect, Samuel Warner, 132 Broadway.

One Hundred and Sixteenth St., n s, 90′ w Eighth Ave., 3 five-st'y brick tenements, flat tin roofs; cost $48,000; owner, Hiram Moore, 56 East One Hundred and Tenth St.; architect, J. H. Valentine, 108 East One Hundred and Twenty-fifth St.

Thirty-fourth St., s s, 105′ w Tenth Ave., five-st'y brick tenement, flat tin and plastic slate roof; cost, $16,000; owner, John Livingston, 130 East Seventy-first St.; architect, Fred. T. Camp, 60 Liberty St.

Alterations.—*East Fifty-fifth St., Nos.* 415 *and* 417, three-st'y brewery-building, flat roof, internal alterations, etc.; cost, $3,000; owner, Peter Doelger, 405 East Fifty-fifth St.; architect, Chas. Stoll, 134 Broadway.

Fifth Ave., cor. Nineteenth St., four-st'y brick building, to be altered to art-gallery; cost, $9,000; lessees, C. R. Yandell & Co., 50 West Nineteenth St.; architects, McKim, Mead & White, 57 Broadway.

Greenwich St., No. 334, and *Washington St., No.* 321, five-st'y brick storage and business building, internal alterations, etc; cost, $15,000; owner, Sarah Taylor, 436 West Twenty-third St.; architects, Babcock & McAvoy, 64 College Pl.

Messrs. J. C. Cady & Co. are the architects selected for the building Nos. 34 and 36 Wall St.

Philadelphia.

Building Permits. — *Chestnut St.*, w of Thirty-eighth St., 10 two-st'y dwells., 15′ x 44′; Jno. G. Ruff, contractor.

Woodstock St., s of Dickinson St., 13 two-st'y dwells., 14′ x 28′; L. Simpson, owner.

Cope St., s of Chestnut St., 2 two st'y dwells., 16′ 6″ x 2′?; Jno. Develin, owner.

Oxford St., No. 2611, two-st'y dwell., 14′ x 40′; Jno. Spoeri, owner.

Wister St., Germantown, three-st'y back building, 16′ x 42′; J. D. Caldwell, owner.

Clearfield St., w of Twentieth St., three-st'y dwell., 15′ x 37′; Chas. Savage, contractor.

Twentieth St., cor. Columbia Ave, alteration, 20′ x 30′; Thos. McCarthy, contractor.

Oxford St., near Twenty-first St., one-st'y shop, 18′ x 30′; Griffin & Lawrence, owners.

Hancock St., n of Huntingdon St., two-st'y stable, 90′ x 200′; Samuel Hart, contractor.

Frankford Road, No. 1123, three-st'y dwell., 18′ x 54′; Jacob Baxter, owner.

Hancock St., cor. Herman St., three-st'y addition, 16′ x 56′; O. P. Fisher.

Gowen Ave., e of Sprague St., two-st'y dwell., 34′ x 44′; Jno. Hartman, owner.

Moore St., e of Otsego St., three-st'y factory, 75′ x 100′; A. M. Green & Co., contractors.

Fifth St., near Venango St., 2 two-st'y stores, 15′ x 42′; J. Vanderslick, owner.

Arch St., s e cor. Twenty-third St., one-st'y blacksmith shop, 20′ x 30′; R. W. Strode, contractor.

Second St., s of Butler St., one-st'y boiler-shop, 10′ x 50′; Finwechler & Co., contractors.

South Thirteenth St., No. 1216, one-st'y store, 19′ x 35′; R. D. Clark, contractor.

Reed St., No. 308, in rear, two-st'y stable, 35′ x 85′; J. W. Kuhn, contractor.

Boyer St., near Gower Ave., three-st'y dwell., 31′ 6″ x 37′ 6″; W. Flanagan, contractor.

Broad St., c r. Susquehanna Ave., two-st'y factory, 28′ x 39′; Jos. Warrington, owner.

Tyson St., s of Lehigh Ave., 9 two-st'y dwells., 13′ x 28′; Jno. Loughrin, owner.

Third St., n of Lehigh Ave., two-st'y office, 22′ x 44′; Jos. Parker, contractor.

Fifteenth St., near Tioga, two-st'y dwell., 17′ x 48′; B. Devine, contractor.

Ninetieth St., cor. First Ave., three-st'y dwell., 25′ x 42′; Geo. F. Herr, contractor.

St. Louis.

Building Permits.—Eight permits have been issued since our last report, three of which are for unimportant frame houses. Of the rest those worth 2,500 and over are as follows: —

J. S. McClellan, two-st'y brick dwell.; cost, $4,500; L. Cass Miller, architect; J. B. Asper, contractor.

John T. Scheneder, two-st'y brick tenements; cost, $4,900; Ed. C. Henner, architect and contractor.

Mrs. L. M. Riley, two-st'y brick store and dwell.; cost, $2,700; architect, F. G. Polk; contractor, Jus. Wesling.

General Notes.

Andover, Mass.—Arrangements for the erection of the new church for the Episcopal parish, Rev. Leverett Bradley, rector, have been completed. The church itself will be built and furnished complete by Mr. John Byers, at an estimated cost of $35,000. The architects of the church are Messrs. Hartwell & Richardson of Boston, and the whole work will be executed under the supervision of the donor's brother, Mr. Joseph Byers of Newtonville.

Bath, L. I.—The Hamilton Club, of Brooklyn, have purchased a tract of land at Bath, L. I., 390′ on the bay and 300′ deep, of Carl Racknagel, for $55,000. A new club-house will be built upon the grounds.

Cape May, N. J. — The members of the Grand Army of the Republic are to erect a monument costing $14,000, to the memory of the soldiers from that county who were killed in the Civil War.

The American Architect and Building News For 1886.

A PRELIMINARY PROSPECTUS.

WE believe that preparations have been made which assure to subscribers to the *American Architect* for 1886 a peculiarly well-balanced and readable journal.

It is not possible to cover during a single year all the branches of art, science, and literature which interest the profession; we have, therefore, selected for treatment during the coming year the following topics: —

"**The Processes of Mural Painting,**" an illustrated series of papers by Frederic Crowninshield, artist, will appeal to those interested in the arts of interior decoration.

"**Safe Building,**" a series of papers by Louis De Coppet Berg, architect, being the work of a practising architect and not that of a mere book-maker or theorist, will be unquestionably acceptable to the younger men, at least. Mr. Berg, aiming to make his work of the greatest value to the largest number, will confine himself in his mathematical demonstrations to the use of arithmetic, algebra and plane geometry. In short, these papers may be expected to be in the highest sense *practical*.

"**Architect, Builder and Client before the Law,**" by T. M. Clark, architect, which will not begin to appear before the last half of the year, will, we believe, form that compendium of laws affecting the practice of the architect in this country and that digest of leading cases under these laws, the present want of which is so serious a hindrance to an architect's understanding his own position as regards his clients and his contractors.

"**Ancient and Modern Light-Houses,**" a series of illustrated papers, by Major D. P. Heap, Secretary of the Light-House Board, besides their value from an historical point of view, will have a very real interest to a profession which has so often to deal with delicate and unusual conditions affecting the stability of foundations and the construction of lofty towers. There is so much of romance attaching to all that relates to storm and shipwreck, that we believe even lay-readers will find enough of anecdotic interest in these papers to hold their attention.

"**The Water Supply of Buildings,**" a series of illustrated papers, by John Pickering Putnam, architect, will serve to indicate that the interests of sanitation will not be neglected.

"**Strolls about Mexico,**" by Sylvester Baxter, will for some time longer do much to enlighten us as to the architecture and style of life to be found in our sister republic. These papers will, as in the past, be illustrated.

"**Notes of Travel,**" illustrated and unillustrated, by C. H. Blackall, architect, and other tourists, professional and unprofessional, will keep our readers fairly posted as to what may be seen and heard away from home.

"**The Legendary Art of the Zunis,**" is only mentioned as the subject of a possible series of papers, whose appearance will depend on the health of Mr. Frank E. Cushing, the well-known ethnologist, who has expressed a desire to prepare some account of the art of his interesting co-religionists.

"**Early Settler Memorials,**" a very fully illustrated series of papers, by Truman H. Bartlett, sculptor, will discuss the work of some of the most noted American as compared with that of European sculptors.

We feel that subscribers may rest assured that within the ribs of the skeleton we here dangle before their eyes will be found many other things of professional interest and value.

THE ILLUSTRATIONS.

Where so much depends on the interest that the best designers take in making contributions, it is difficult to make any very definite promises. Perhaps the best thing to say is that we are very far from feeling that our illustrations in the past cannot be improved upon by those of the future, and that so far as diligence and endeavor on our own part or on the part of our draughtsmen go, no effort will be spared to increase the quality of the illustrations which to many are the most important part of the journal.

We can, however, promise to subscribers to the

GELATINE EDITION

that they will receive — without extra cost — twice the number of gelatine plates than were promised them last year; and we may be allowed, perhaps, to suggest a measure of the value of our promises by pointing to the fact that subscribers to this edition have received more gelatine plates this year than they were originally promised.

BUILDING NEWS.

Out of regard for the interests of a large number of subscribers there will be published during 1886, a mid-week supplement, devoted to the dissemination of information concerning new building enterprises. This supplement, small at first, as it makes its appearance in the slack season, will be enlarged as the advance of the building season may require.

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BUILDING INTELLIGENCE.

General Notes. (*Continued.*)

Cleveland, O. — The civil engineer's conference, which has been in session for several days, closed after the adoption of resolutions recommending that Congress establish a Bureau of Public Works, the basis of the organization of this Bureau to be made the subject of study and report by a Board appointed by the President of the United States.

Columbia, D. T.—A contract has been let for a Catholic church here.

Diana, D. T. — A Catholic church, with a seating capacity for two hundred, is being built here.

East Saginaw, Mich. — The Trustees of the Hoyt Library extend invitations to architects to furnish plans for a building to cost not more than $50,000. Work is expected to be begun in the spring, and pushed rapidly forward.

Eau Claire, Wis. — The Norwegian Methodist Society is building a church, 40′ x 60′.

Ellendale, Minn. — The Presbyterian Church of this place is being rebuilt and is now nearly enclosed. It will be a much more imposing structure than the building before erected by that denomination.

Fairfield, Me.—It is rumored that a large paper mill is soon to be built in connection with the Somerville Fibre Company's mills.

Far Rockaway, N. J. — A site has been purchased on Catharine St., on which will be erected a summer theatre. A stock company has been organized with a capital of $40,000.

Fergus Falls, Minn. — A county jail is to be built here next year.

Frontenac, Minn. — The old Bullard Mill property has been purchased by Messrs. Mallon & Gaylord, of Belvidere, who will build a new mill at an early day.

Graceville, Minn. — Parties will build a large machine and blow shop here, if exempted from taxation for five years.

Groton, D. T.—The Farmer's Bank is contemplating the erection of a large brick building next spring.

Harlem, N. Y. — The Mount Morris Baptist Church in Fifth Ave., bet. One Hundred and Twenty-sixth and One Hundred and Twenty-seventh Sts., have succeeded in raising $30,400. It is intended to build the new church on the lots which are now occupied by the old building. It was decided that no subscription should be binding until $30,000 had been subscribed. No contract will be made for the work until $40,000 are raised, and at least $20,000 paid into the treasury. It is hoped to begin the work early in the spring. The new church will be one of the largest in the upper part of New York.

Helena, Wis.—A marble quarry has been discovered on the Wisconsin River, near this town.

Holly Beach, N. J.—A new Methodist church is to be built to take the place of the one destroyed by an incendiary some months ago.

Jefferson, Ill.—The trustees of Jefferson, Ill., have decided to erect a new jail.

Kankakee, Ill.—The G. A. R. will probably erect a $6,000 soldiers' monument similar to the one at Middletown, Conn.

Kingston, N. Y. — Superintendent of the Poor, Silas Salton, has been before the Board of Supervisors, now in session here, with a long petition setting forth the urgent need of a new poor-house. In accordance with the petition a committee of four members of the Board has been appointed to ascertain and report a plan for a new poor-house and asylum combined.

Lisbon Falls, Me. — A large pulp-mill will be built next season; $75,000 to $100,000 will be invested. Gentlemen at Lisbon Falls, Topsham and places out of the State are financially interested.

Lynn, Mass.—The Lynn Knights of Labor are considering the matter of a new building, and ways and means of securing funds for the same. A fair is proposed in aid of the project.

Bids and Contracts.

Harrisburg, Pa. — The Board of Public Buildings and Grounds has awarded the contract for frescoing the rotunda from the floor to the dome and the corridors on both the first and second floors. The bidders were F. A. Nichols of Philadelphia and F. Illippo Castaginni of Washington. Nichols was awarded the contract, his bid being $6,250.

Louisville, Ky. — The Louisville Water Company will build a new pumping-station. Jacob Bickle has the contract for building the embankment for $15,500.

Omaha, Neb. — The contract for the new addition to the Union Pacific headquarters has been let to J. F. Coots, the builder of the new Douglas County Court-House.

PROPOSALS.

WATER-PIPE. [At Abington, Mass.]

Office of Water Commissioners,
Abington, December 9, 1885.

Sealed proposals for laying about 22 miles water-pipes for the towns of Abington and Rockland will be received at this office **until 2 o'clock, P. M., on the 15th day of January, 1886.**

The right will be reserved to reject any and all bids.

Blank proposals, specifications, and information as to the conditions of contract will be furnished on application to this office. GEO. A. BEAL,
523 Secretary.

IRONWORK. [At Louisville, Ky.]

Office of the Supervising Architect,
Treasury Department,
Washington, D. C., December 10, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 2d day of January, 1886,** for furnishing and putting in place complete the basement columns and first-floor beams etc., for the court-house, post-office, etc., building, at Louisville, Ky., in accordance with drawings and specifications, copies of which, and any additional information may be had on application at this office, or the office of the superintendent.

Bids must be accompanied by a certified check for $200.
521 M. E. BELL, Supervising Architect.

IRONWORK. [At Fort Wayne, Ind.]

Office of the Supervising Architect,
Treasury Department,
Washington, D. C., December 11, 1885.

Sealed proposals will be received at this office **until 2 P.M., on the 31st day of December, 1885,** for furnishing and fixing in place complete the iron-roof, attic floor beams, etc., required for the court-house, post-office, etc., building, at Fort Wayne, Ind., in accordance with drawings and specifications, copies of which and any additional information may be obtained had on application at this office, or the office of the superintendent.

Bids must be accompanied by a certified check for $300. M. E. BELL, Supervising Architect.
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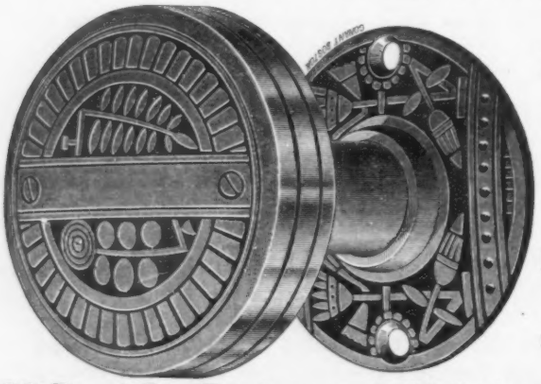

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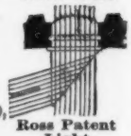

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PROPOSALS.

IRONWORK. [At Brooklyn, N. Y.]

Office of the Supervising Architect,
Treasury Department,
Washington, D. C., December 5, 1885.

Sealed proposals will be received at this office **until 2 P.M., on the 21st day of December, 1885,** for furnishing and putting in place the iron columns, girders, beams, etc., required for the first floor of the post-office, etc., building at Brooklyn, N. Y., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office, or the office of the superintendent.

Bids must be accompanied by a certified check for $200. M. E. BELL, Supervising Architect.
521

MONUMENT. [At Charleston, S. C.]

Charleston, S. C., November 28, 1885.

Bids will be received **until 12 M., January 15, 1886,** for furnishing and setting all the granitework necessary for the Calhoun Monument, at Charleston, S. C., and for setting five bronze statues, all in accordance with plans and specifications for same, which will be furnished to intending bidders, upon application to the undersigned.

The right to reject any or all bids is reserved.

The successful bidder will be required to give bond for the faithful performance of the work.

LOUIS DeSAUSSURE,
C. IRVINE WALKER, } Committee.
521 SAML. B. PICKENS,

TIMBER. [On the Great Kanawha River, W. Va.]

U. S. Engineer Office, Charleston,
Kanawha County, W. Va., November 14, 1885.

Separate proposals for furnishing about 87,000 feet B. M., of first-class white oak, and 6,000 B. M., of white pine, at Lock and Dam, No. 6, Great Kanawha River, W. Va., for lock-gates and for wickets of movable dam, will be received at the U. S. Engineer Office, Charleston, Kanawha County, W. Va., **until noon of December 22, 1885,** and opened immediately thereafter.

Blank forms, specifications and all necessary information can be had by application to Mr. A. M. Scott, Assistant Engineer, at the Charleston office.

WM. P. CRAIGHILL,
521 Lieut.-Col. Engineers, U. S. A.

BRIDGE. [At Omaha, Neb.]

Board of Public Works,
Omaha, Neb., October 29, 1885.

The Board of Public Works of the City of Omaha, Neb., invite proposals **until 2 o'clock, P. M., January 9, 1886,** for the construction of a viaduct on Eleventh Street, over the tracks of the Union Pacific and Burlington & Missouri River Railroads.

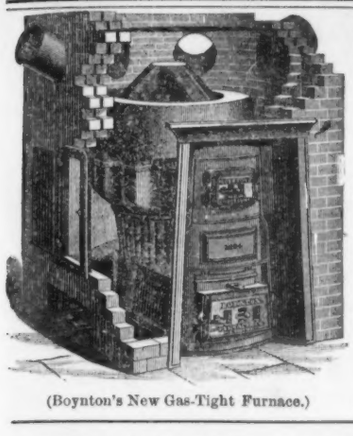
Proposals must be based upon the specifications and outline plans on file in the office of the Board of Public Works, copies of which will be furnished upon application.

Bids are to be accompanied with detail drawings and strain sheets, and shall specify the cost of superstructure for a 20-foot roadway and a 30-foot roadway, and shall separate the superstructure from the foundation work.

Each bidder shall deposit with his proposal a certified check, payable to the undersigned, in the sum of one thousand dollars, to be forfeited to the City of Omaha in case he shall fail to execute a contract and bond satisfactory to the Board within twenty days after the notification of the award, should his proposal be accepted.

The Board reserves the right to reject any or all bids.

The Board of Public Works,
521 J. E. HOUSE, Chairman.



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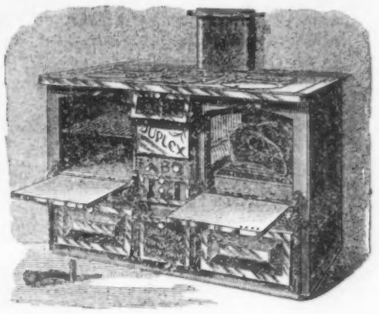

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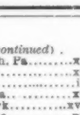

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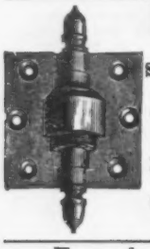

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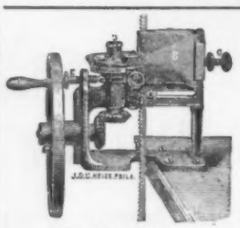

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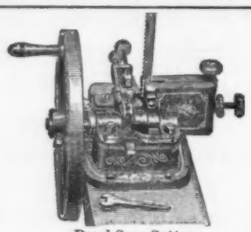

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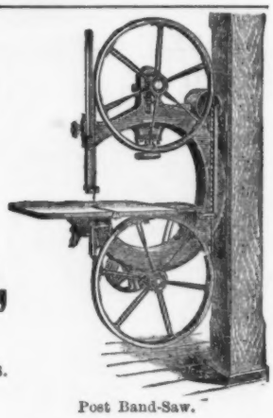

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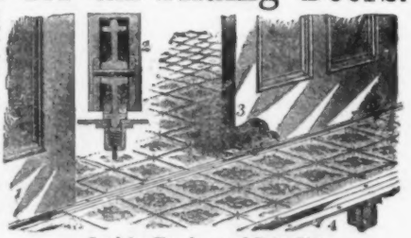

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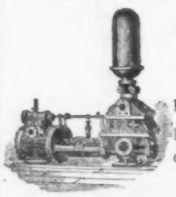

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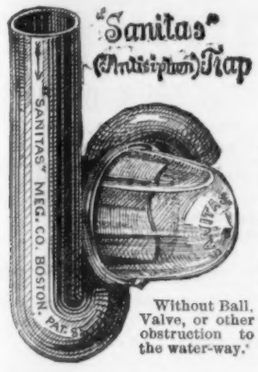

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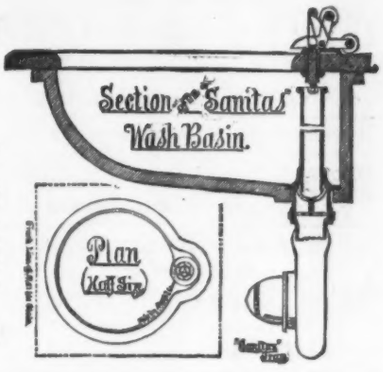

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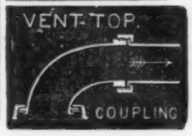

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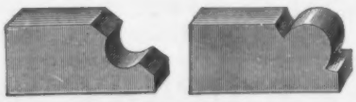

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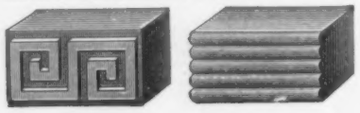

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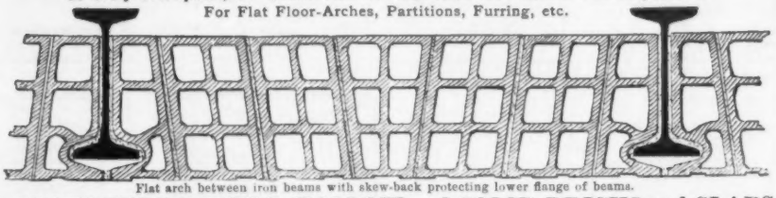

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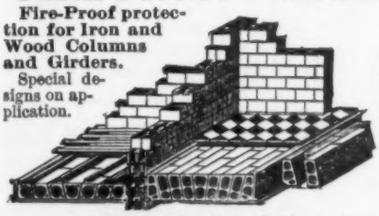

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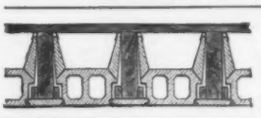

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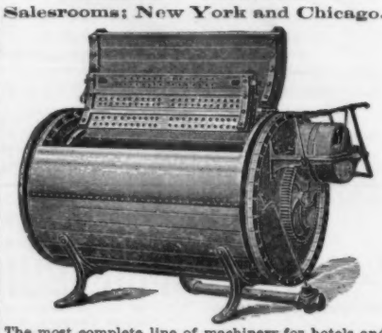

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